



MISSOURI BOTANICAL GARDEN

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GEORGE ENGELMANN BOTANICAL NOTEBOOKS

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18th

A. concolor

Rocky Mts



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cm

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MISSOURI
BOTANICAL
GARDEN

12593

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS



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cm

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MISSOURI
BOTANICAL
GARDEN

Abies concolor

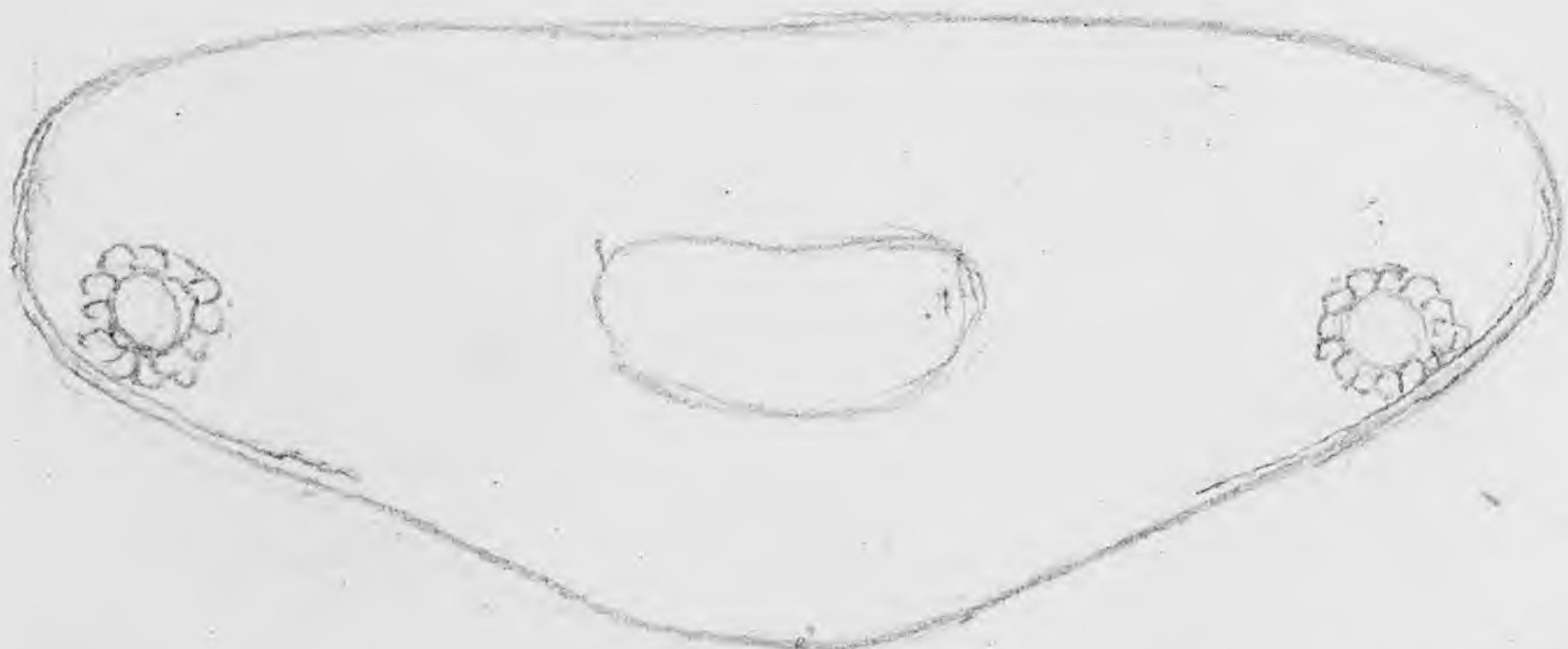
Sept 28 75

T. S. Brandegee

x 30

Summit of Mosca Pass (Sangre de
Christo)
9000' alt

Sept 1875



resinous ducts on the under side of the leaf
towards the margin, close to the cortical layer of
surrounded by green parenchymatous cells
only partially



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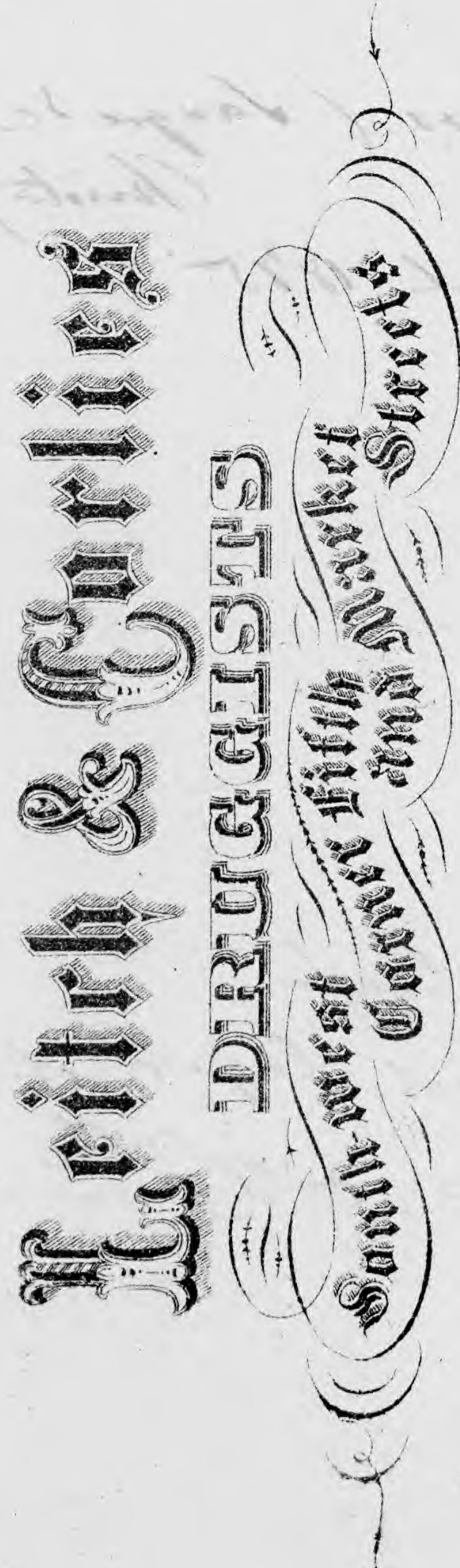
cm

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MISSOURI
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0
cm

1 2 3 4 5 6 7 8 9 10

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MISSOURI
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GARDEN

Abies concolor

Nov 18 1877

Snow Mountain

Sierra Nevada

×30

about 16 lines of stoma above

A. Gray 1877



7-8 lines of stoma in
each band



0 1 2 3 4 5 6 7 8 9 10

cm

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MISSOURI
BOTANICAL
GARDEN

12595

Leitch & Copies

DRUGGISTS

South West Corner Fifth and Market Streets.

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0 1 2 3 4 5 6 7 8 9 10

cm

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MISSOURI
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GARDEN

Abies concolor

Nov 18 1877

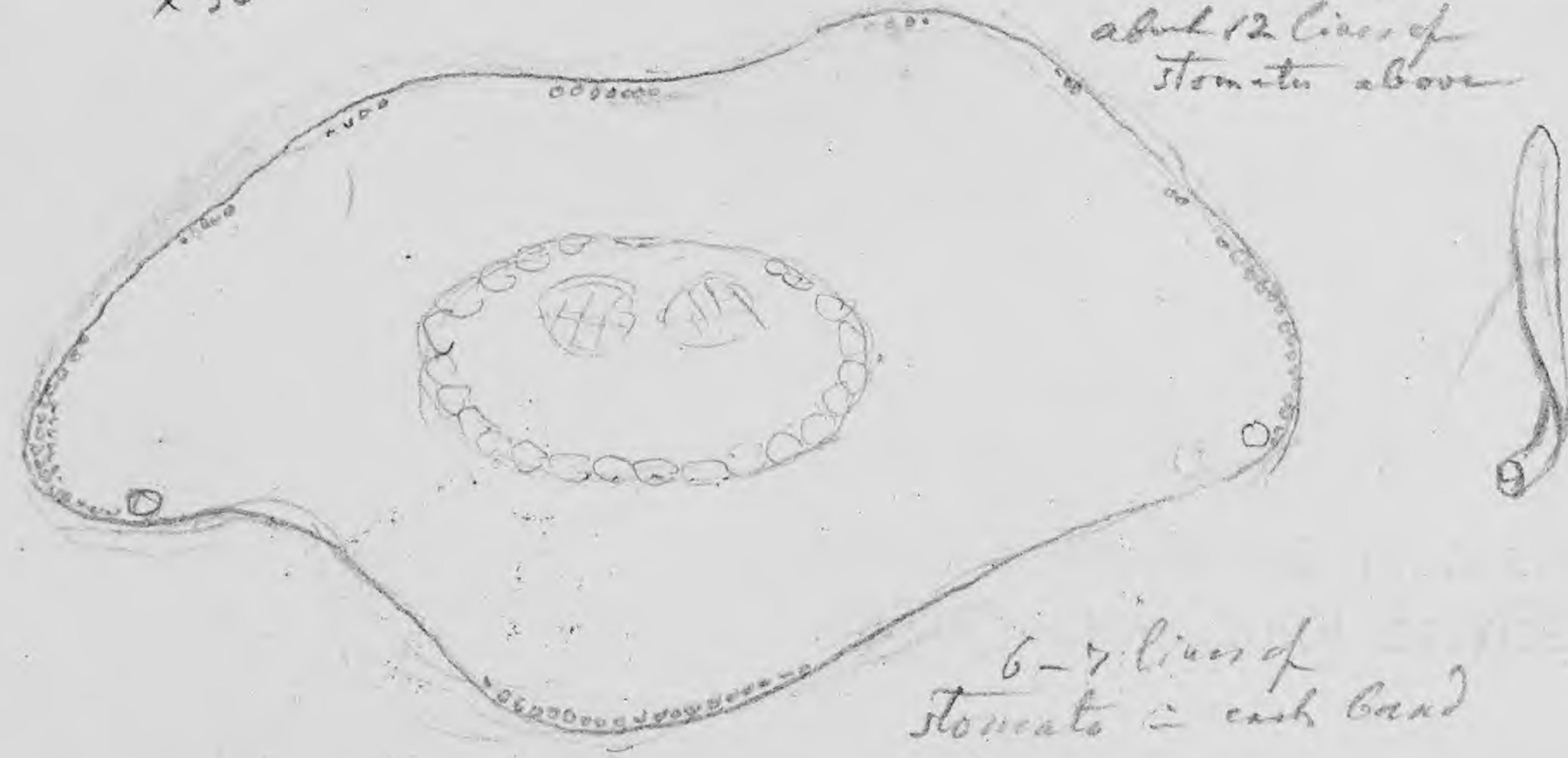
base of Shasta mtn

leaf near base of cone

about 12 lines of
stomata above

Albany 1877

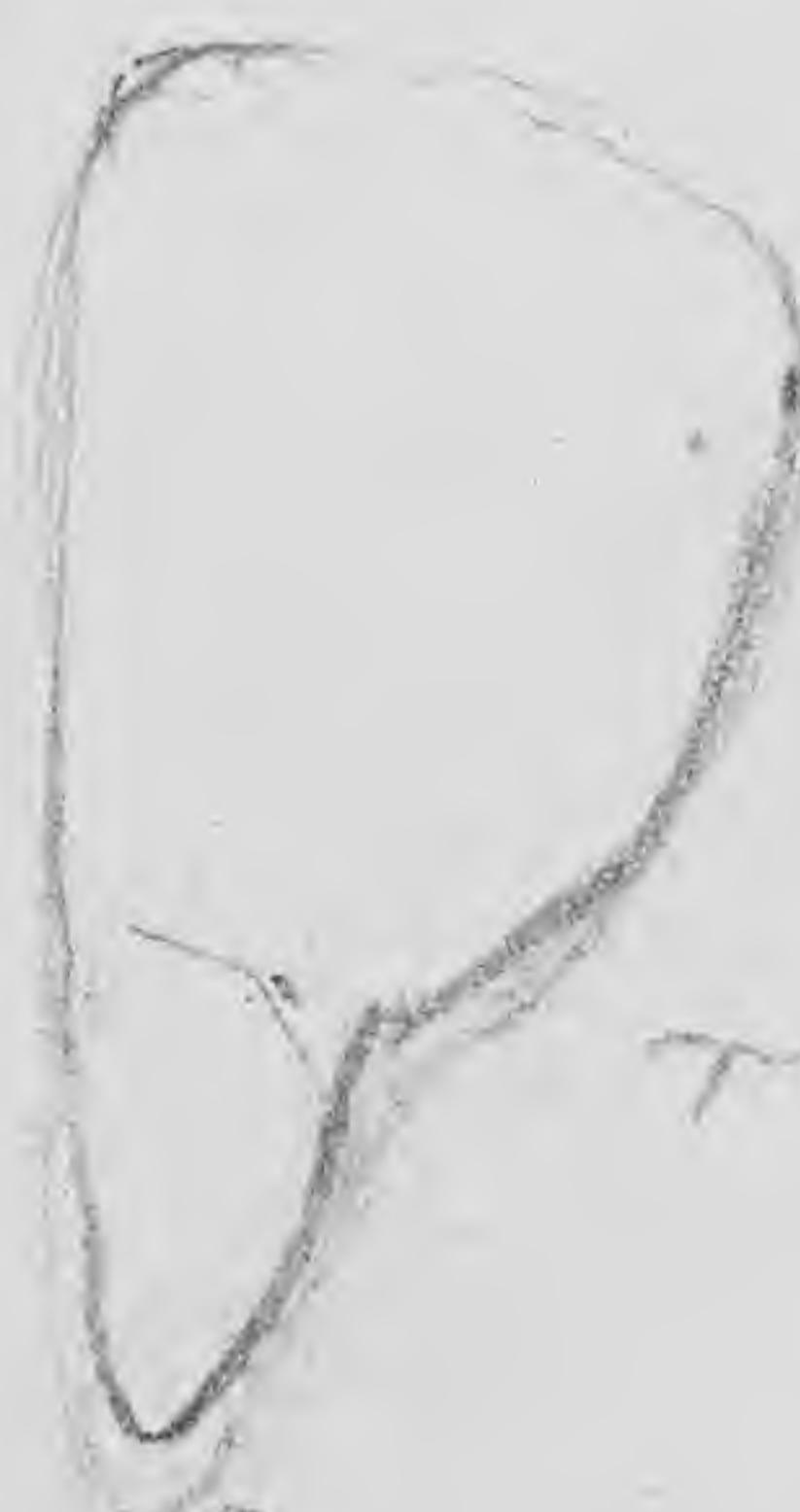
$\times 30$



6-7 lines of
stomata = each band



scale
16 x 9 1/2 lin



2nd
reconstruction



0 1 2 3 4 5 6 7 8 9 10

cm

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Leitch & Corlies

DRUGGISTS

Southwest Corner Fifth and Market Streets.

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cm

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MISSOURI
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GARDEN

12597

Apotheker Apotheker

George Engelmann



No. 3610 North 10th Street,
Between Mallinckrodt and Salisbury,
ST. LOUIS, MO.

187

No.

For

R.P.

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0 1 2 3 4 5 6 7 8 9 10

cm

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MISSOURI
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GARDEN

Abies concolor

Dec 10 1876

As Siler, Kane Co., Utah Aug 11 1874



X2

wing wide 11-12 ^{mm}
long 9+11
wid by 9-10



0 1 2 3 4 5 6 7 8 9 10

cm

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MISSOURI
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GARDEN

12598

HENRY EHREHARDT,
PHARMACEUTICAL CHEMIST,
No. 301 South Fifth Street, Cor. Myrtle, ST. LOUIS.

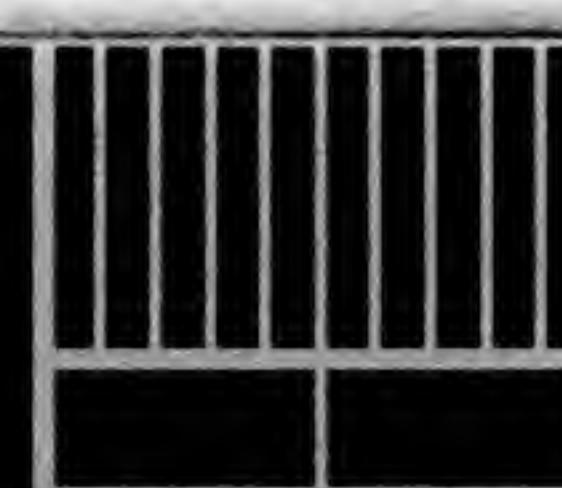
1887

Date

No.

Dr

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0 1 2 3 4 5 6 7 8 9 10

cm

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MISSOURI
BOTANICAL
GARDEN

Abies concolor

Dec 17 1876

x4

x4



Collected 5-7
mostly 6

CH. W. MINTON, M.D.

1876. MINTON & CO. LTD.

1876. MINTON & CO. LTD.



0 1 2 3 4 5 6 7 8 9 10

cm

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GARDEN

12599

R. C. HARRISON,

508 Leffingwell Avenue,

Fruggist & Apothecary



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GEORGE ENGELMANN PAPERS

G. F. ENGELMANN, M.D.,
3003 LOCUST STREET.



0 1 2 3 4 5 6 7 8 9 10

cm

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GARDEN

Colo

Glen Eyrie Sept 21 1874

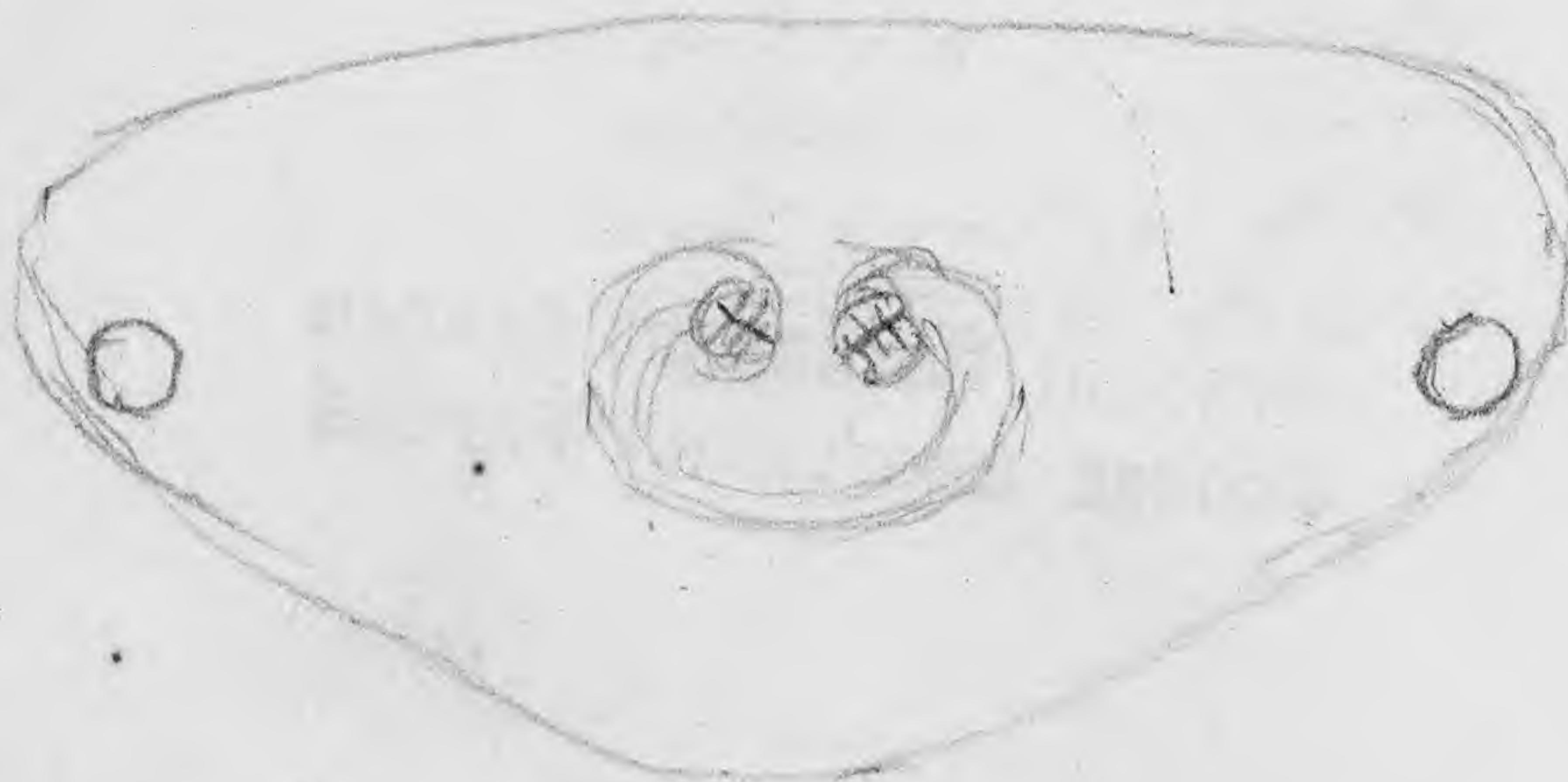
Abies concolor

Glen Eyrie, near Colorado springs, Col

Sept 30 1875

G. E. Sept 1874

stomata abundant



Vegetation of Colorado

W. M. WALTERS
W. M. WALTERS

MISSOURI BOTANICAL GARDEN



0 1 2 3 4 5 6 7 8 9 10

cm

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12600

G. F. ENGLEMAN, M.D.,
3003 LOCUST STREET.



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cm

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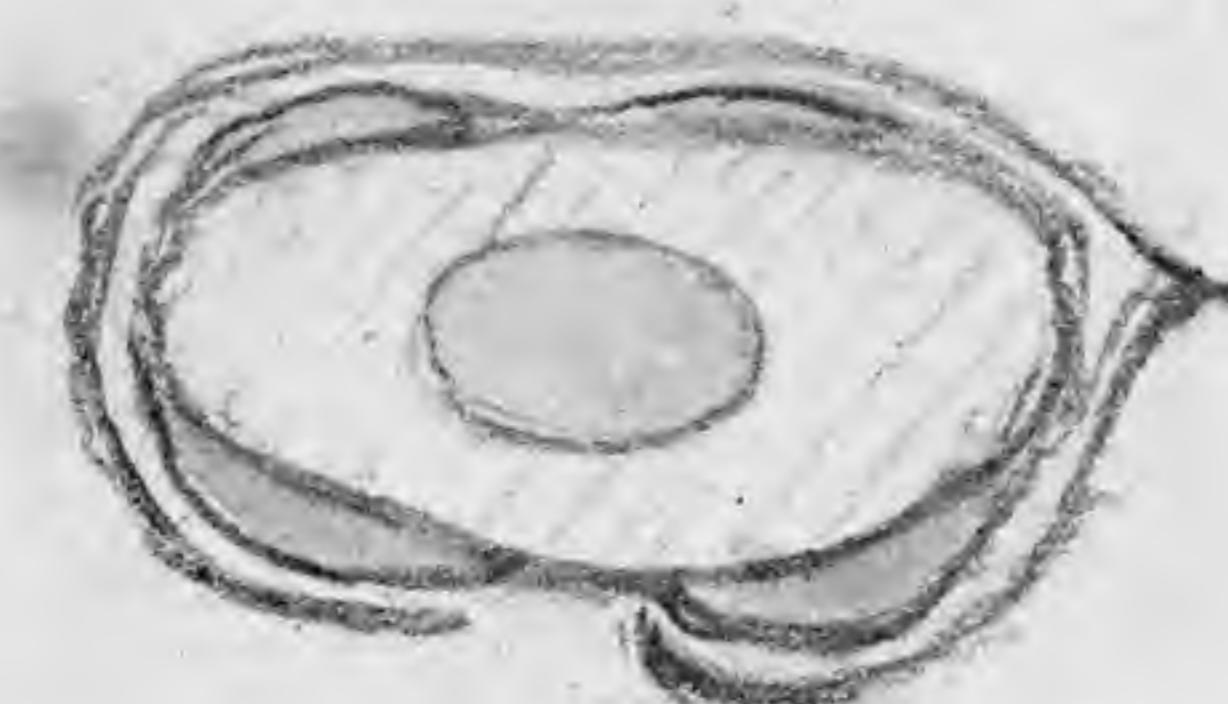
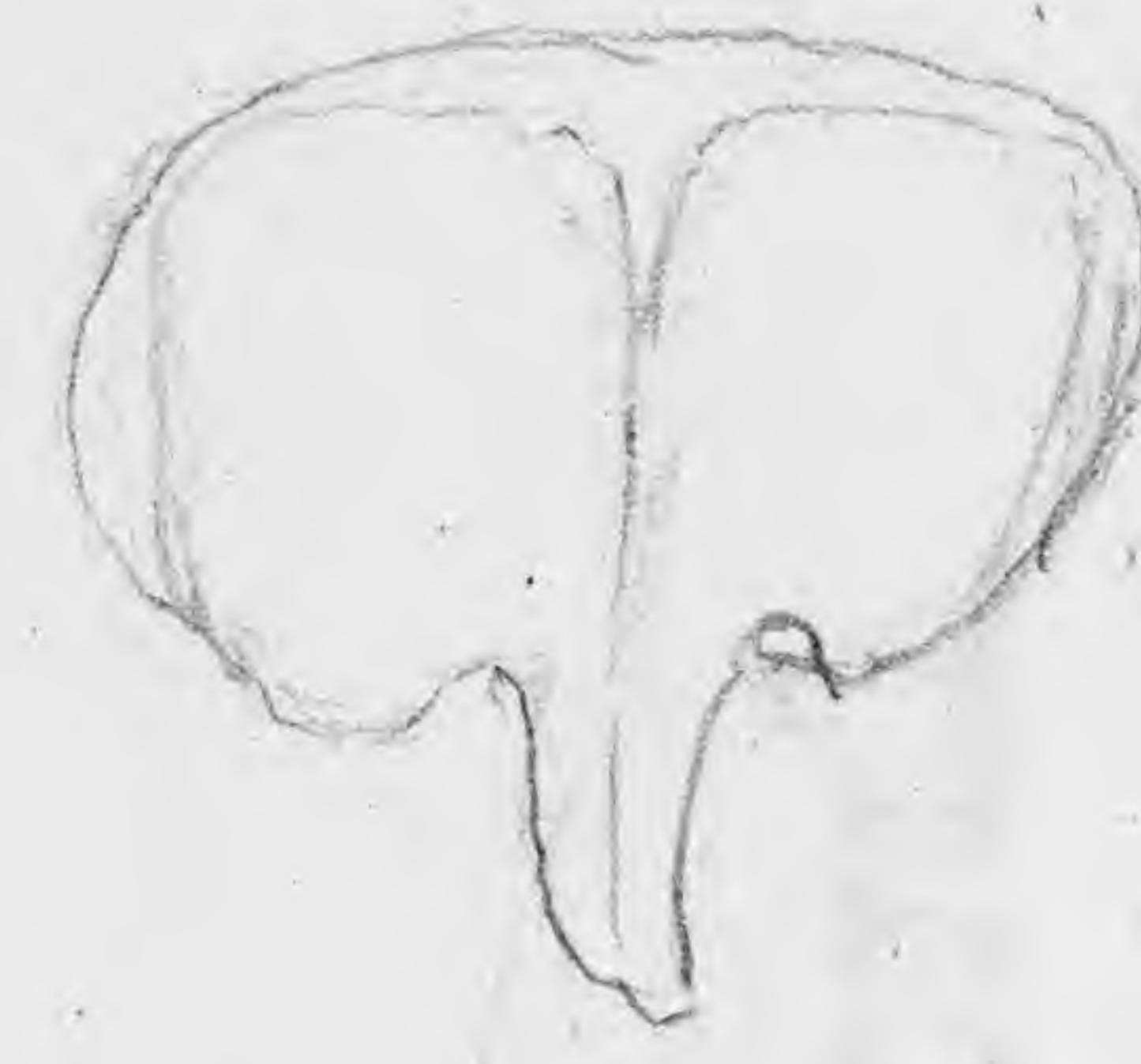
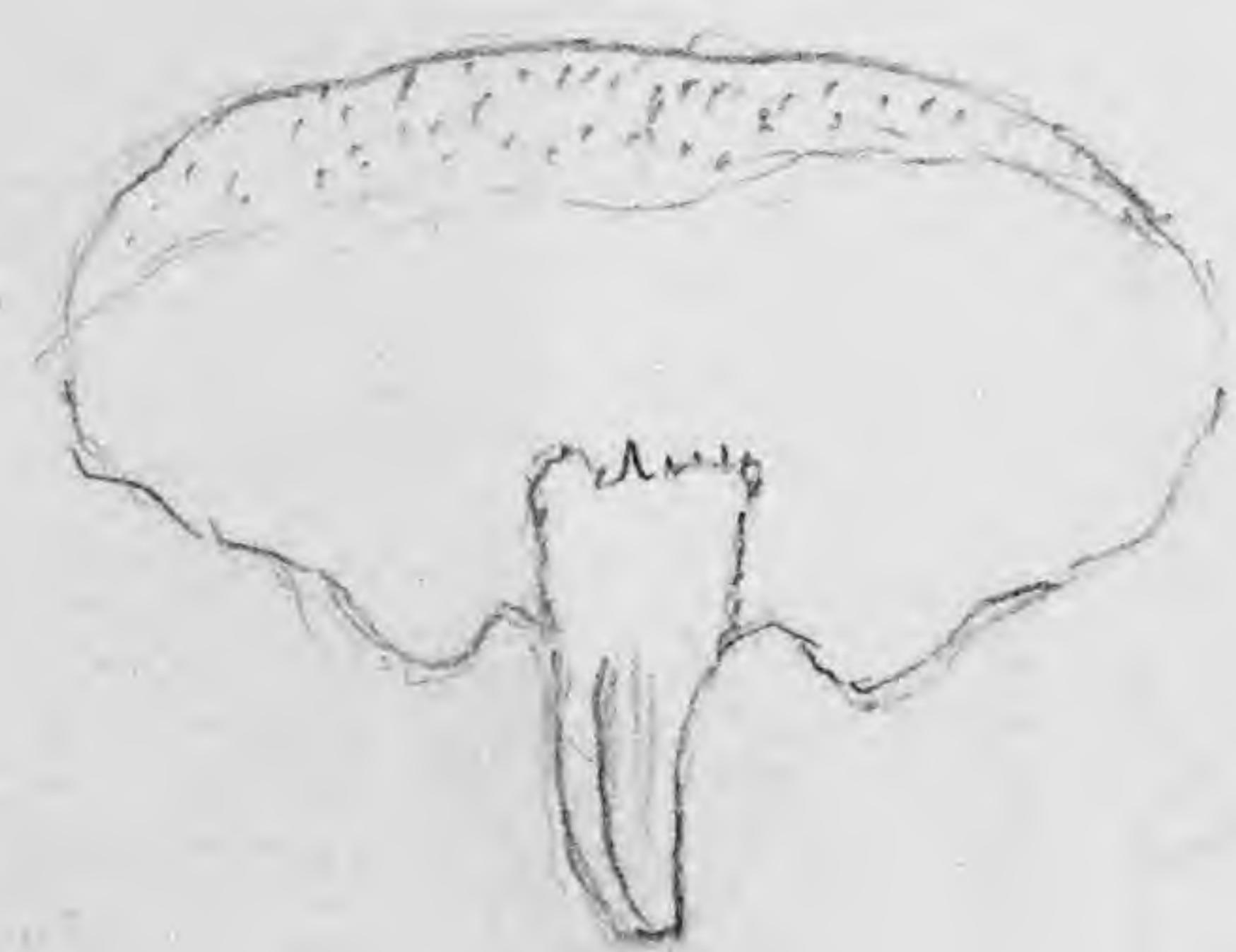
MISSOURI
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GARDEN

Colombia

Abies concolor

Glen Lyric Sept 21 1874

Oct 18 1874



transverse section of
seed #4 with embryo
albumen, oil vesicles
and coating of the
half closed base of wing)



embryo
~~aff~~

5 cotyled



6 cotyl

Fruggist & Apothecary



Fruggist &



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cm

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GARDEN

**HENRY EHREHARDT,
PHARMACEUTICAL CHEMIST,**

No. 301 South Fifth Street, Cor. Myrtle, ST. LOUIS.

187

Date

No.

Ort

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

12601



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cm

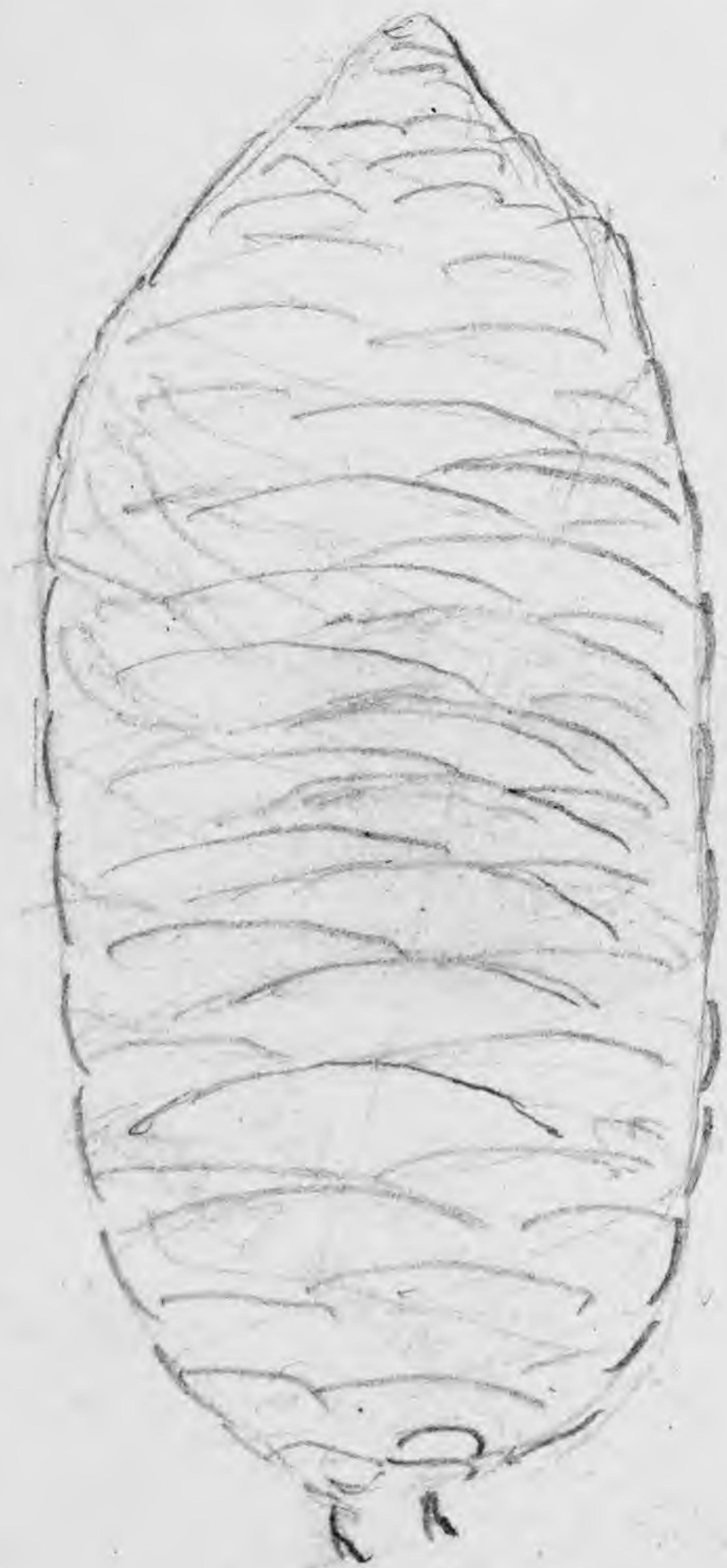
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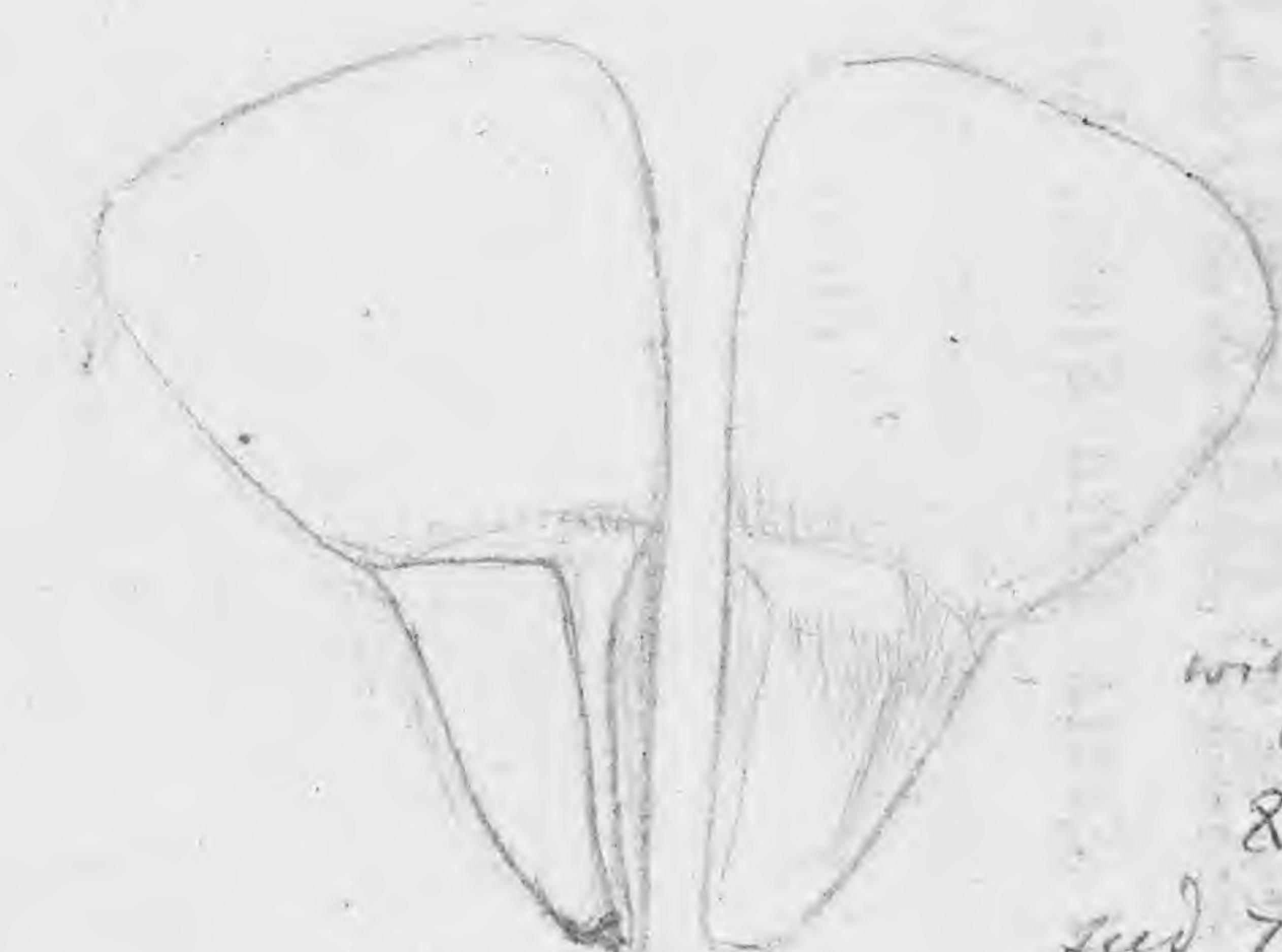
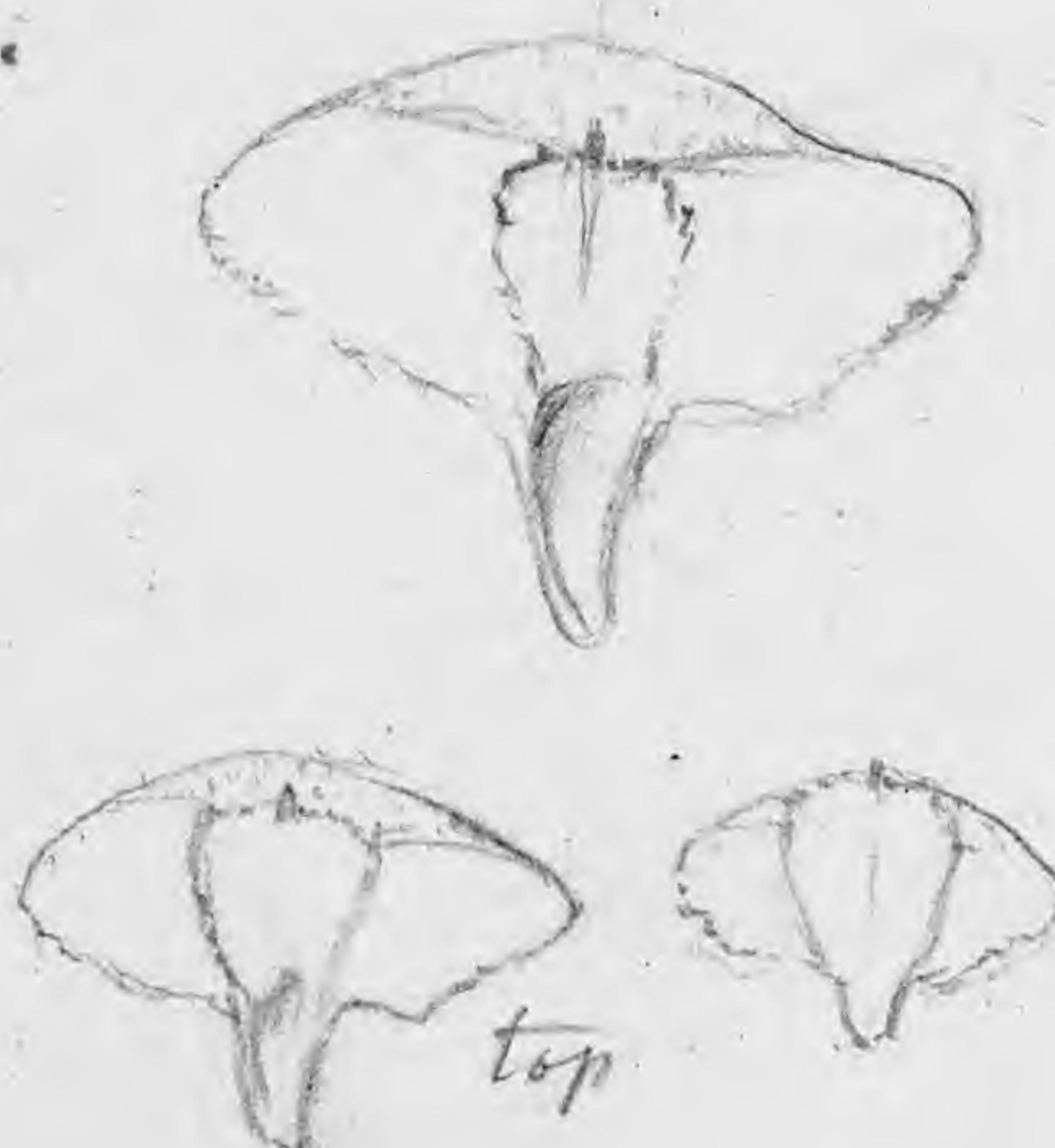
MISSOURI
BOTANICAL
GARDEN

Abis concolor
sent by J. E. Johnson, St George Utah

Dec 8 1874



x2



wing 9-10 ^{mm}
wide
8-9 ^{mm} long
tail 7-8 ^{mm} long



scales in $\frac{1}{21}$ order or
 $\frac{13}{34}$



0 1 2 3 4 5 6 7 8 9 10

cm

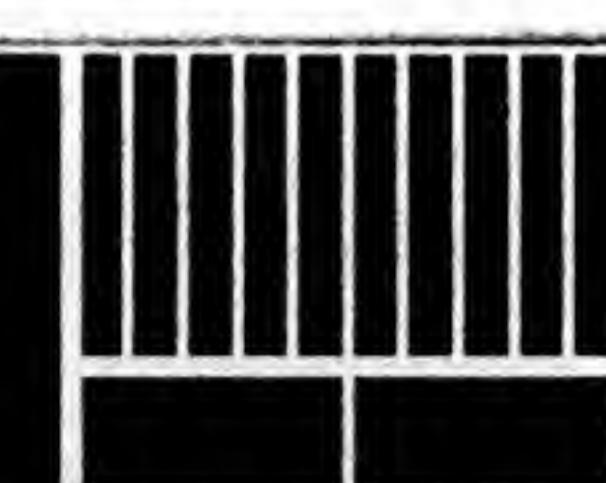
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MISSOURI
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GARDEN

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

1260



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cm

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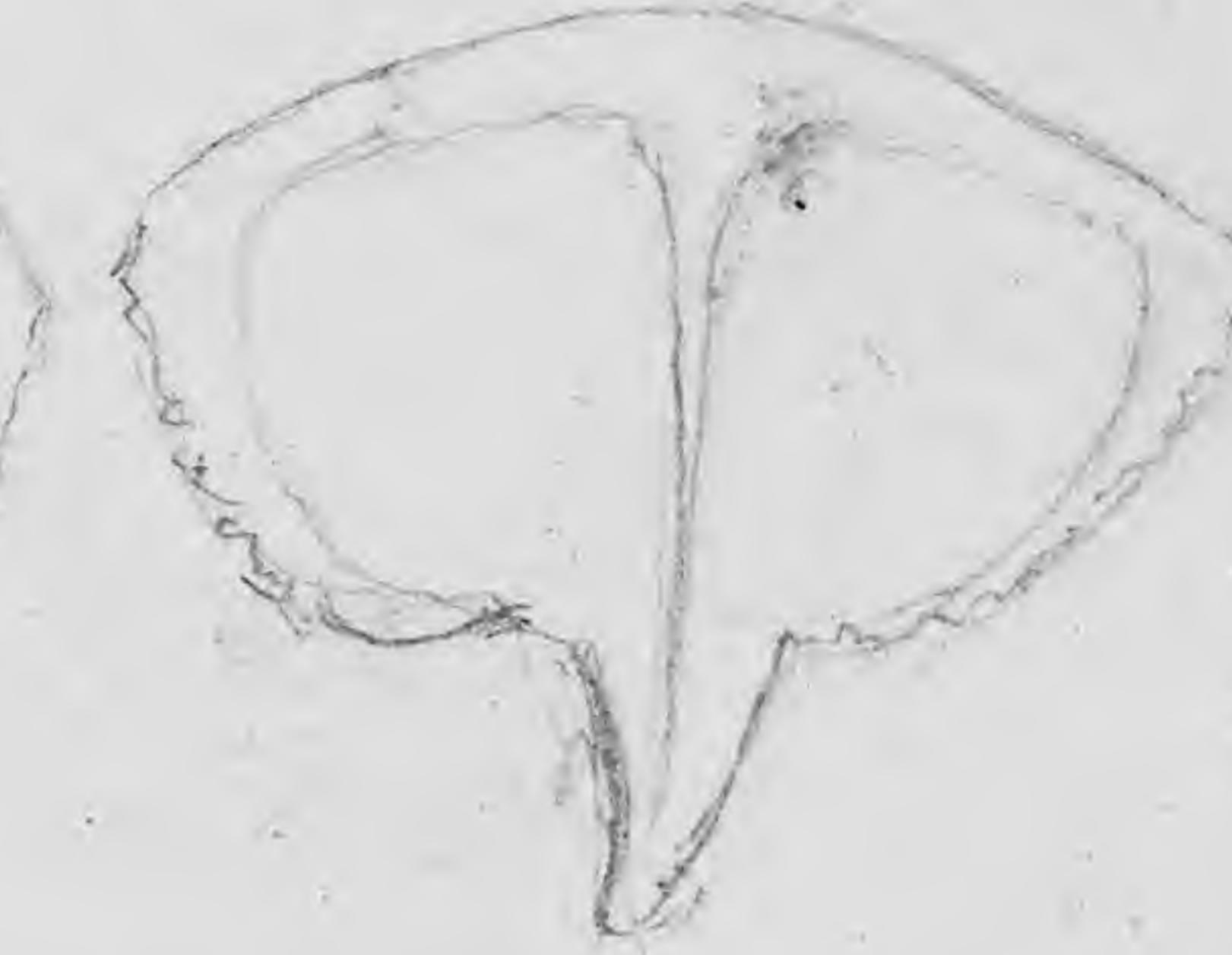
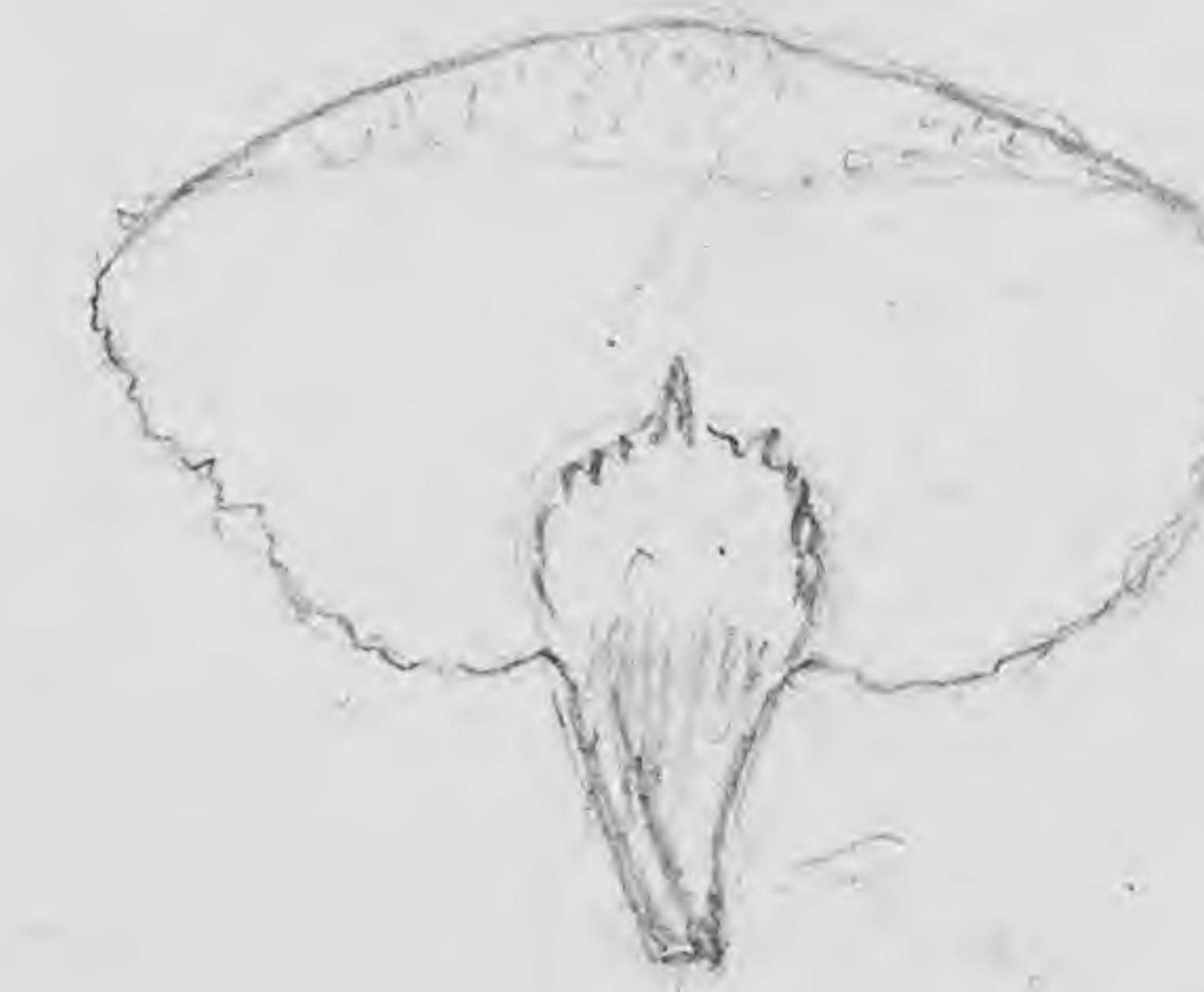


MISSOURI
BOTANICAL
GARDEN

Abies concolor

Dec 8-1874

sent by J E Johnson, St George, Utah



wings 9-10 ^{mm}
8-9 long
seed 8 ^{mm} long

6 Cotyl

9-10
8-9

order 13
1/34



0 1 2 3 4 5 6 7 8 9 10
cm

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MISSOURI
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GARDEN

12603

HENRY EHRHARDT,
PHARMACEUTICAL CHEMIST,
No. 301 South Fifth Street, Cor. Myrtle, ST. LOUIS.

187

Date

No.

Ar

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS



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cm

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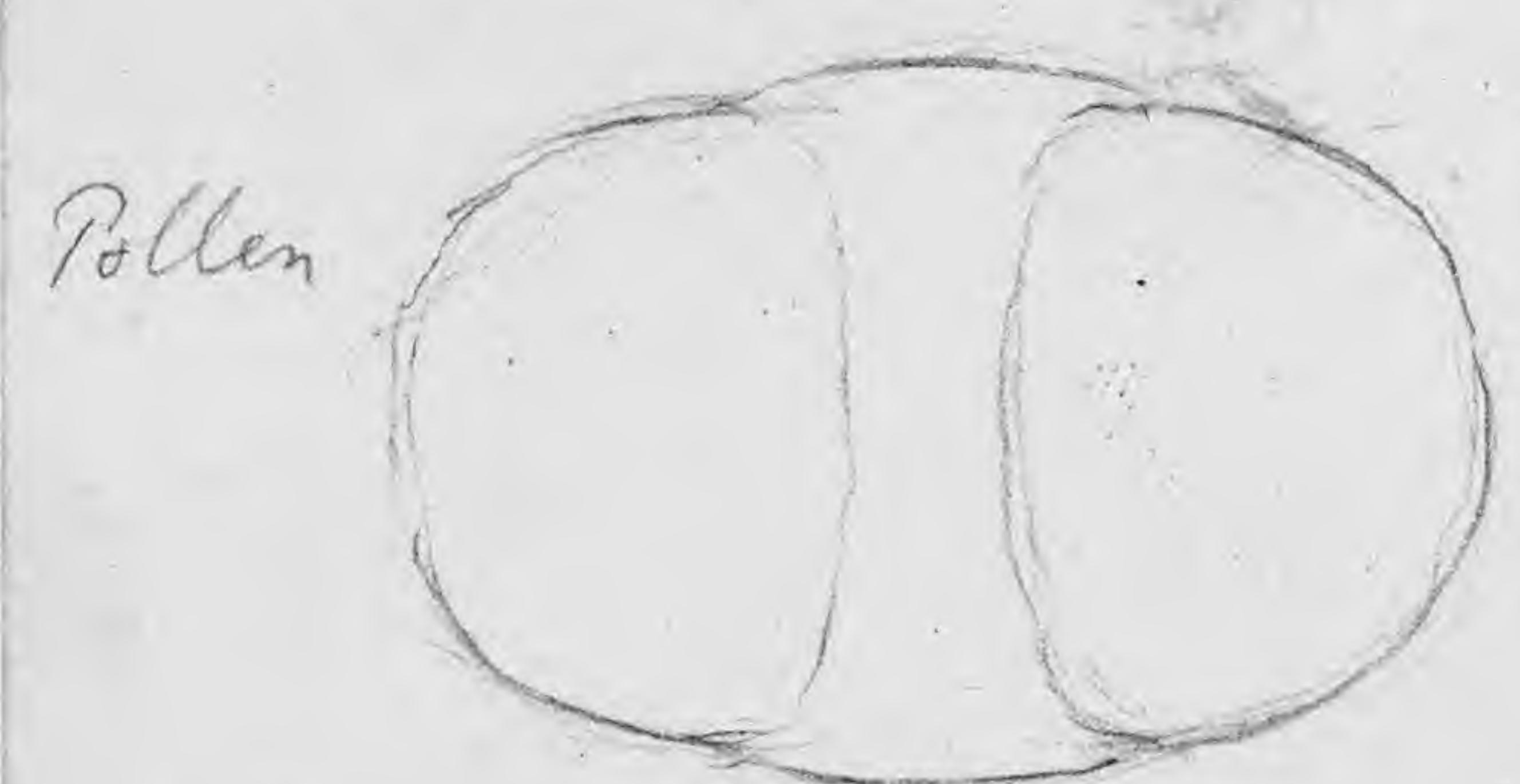


MISSOURI
BOTANICAL
GARDEN

$$\times 280 \quad \frac{34}{280} = 0.12 \text{ mm}$$

Abies concolor

June 27 1874



$$\begin{aligned} 28-35 & \\ \text{mostly } 31-34 & \\ = 0.10-0.125 & \\ \text{mostly } 0.11-0.12 & \text{ mm} \end{aligned}$$

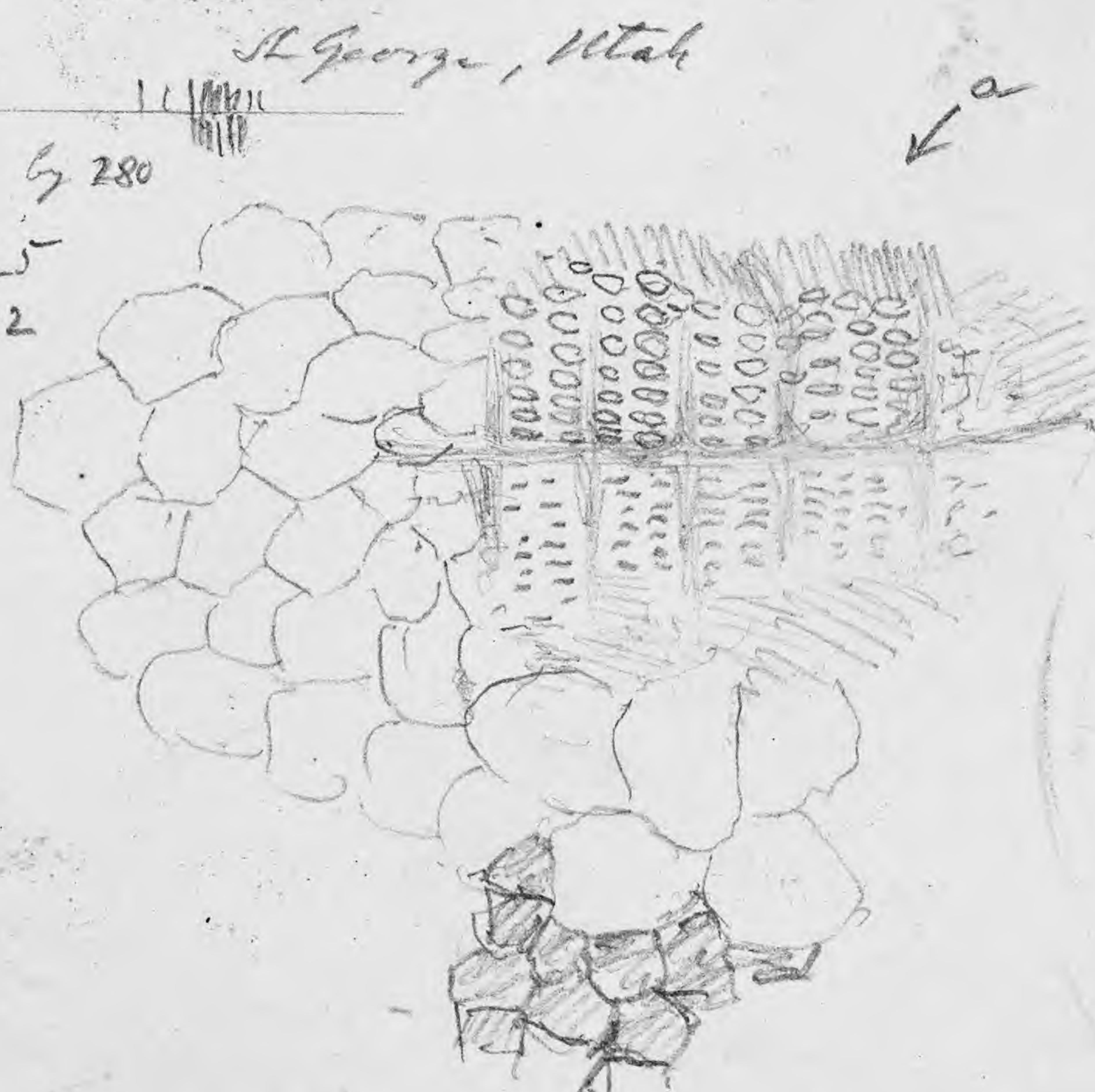
$$\text{Pollen } \times 415 \quad \frac{47}{415} = 0.11 \text{ mm}$$

Pollen 0.10-0.12 mm long



sections of
different leaves

×10



fibrous bundle of
nigella fascia (a)
with the empty
transpiration cells
around it

×280



0 1 2 3 4 5 6 7 8 9 10

cm

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MISSOURI
BOTANICAL
GARDEN

12604

5/ 4700 0,11
415
550
415

280 340 0,12
280
600

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

21-11 30/02 02/02 02/02
10-01 10-01 10-01 10-01
21-01 40-10 50-82 280/280

50-82



0

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cm

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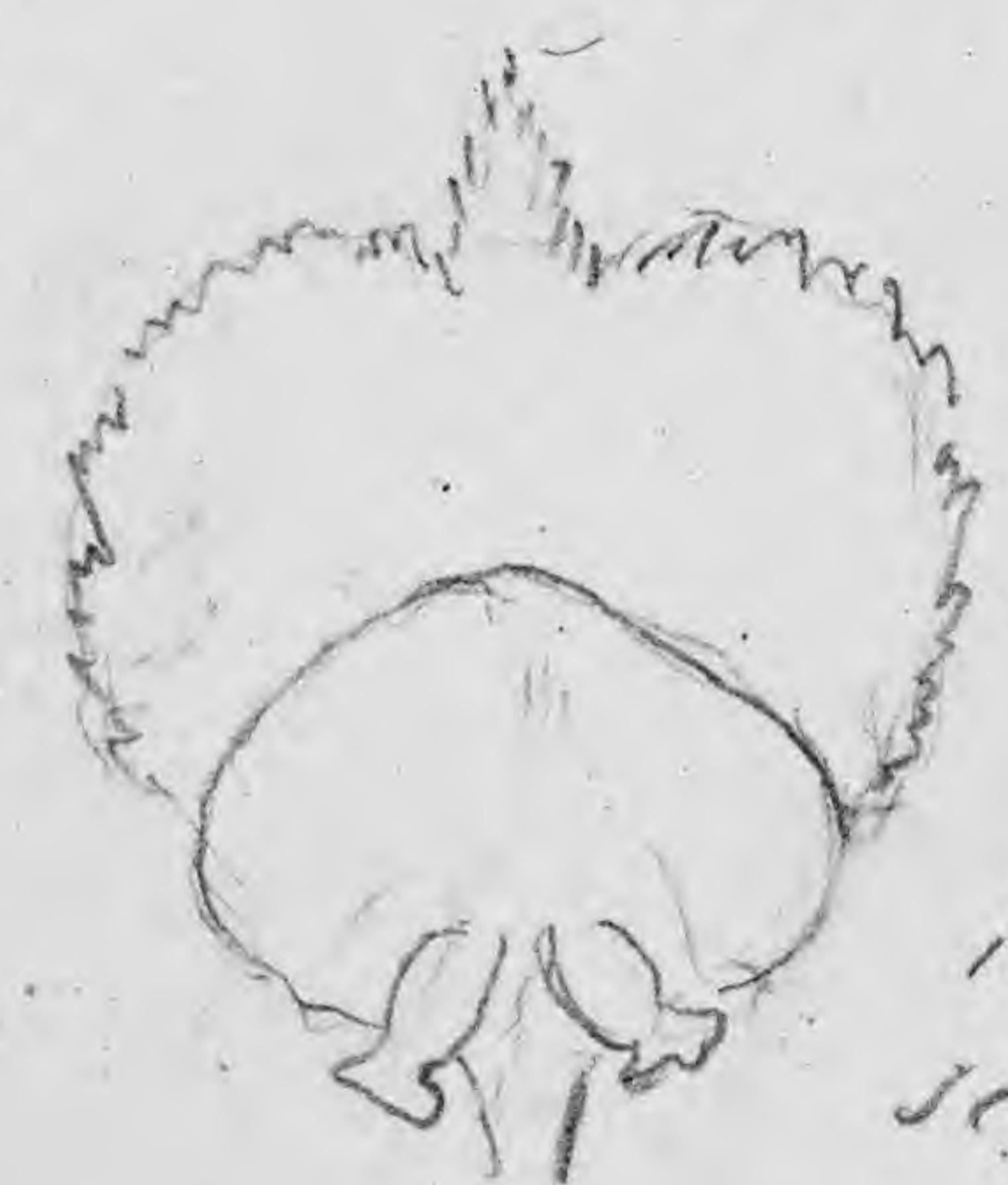
MISSOURI
BOTANICAL
GARDEN

July 2nd 1871

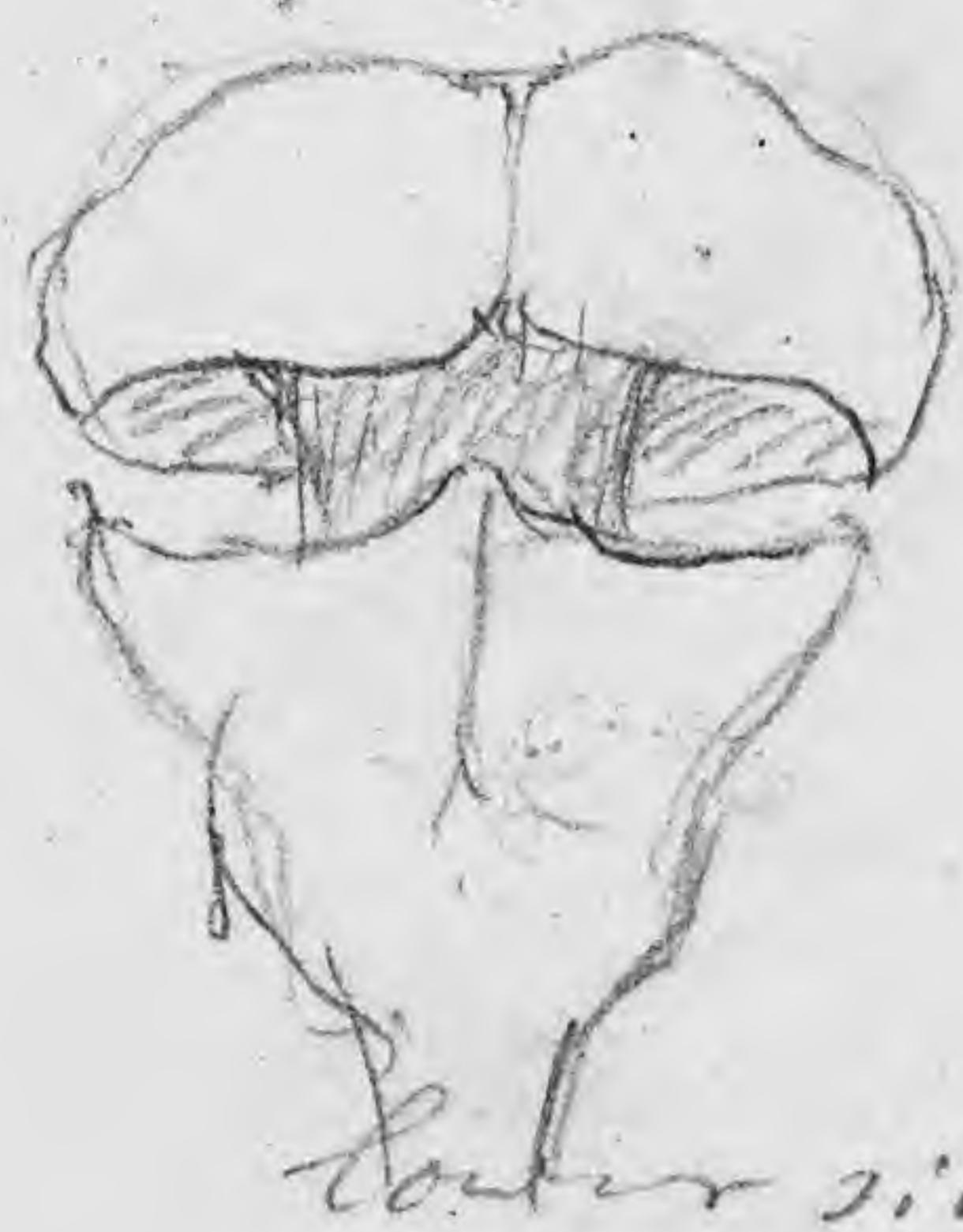
Plant



involucel stiff with resin



front



lower side



upper side

A. concolor

anther x10

George

Barry

Cor. Fifth & Market Sts. St. Louis, Mo.
J. McVittie & Co. 35 x 16 in.



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cm

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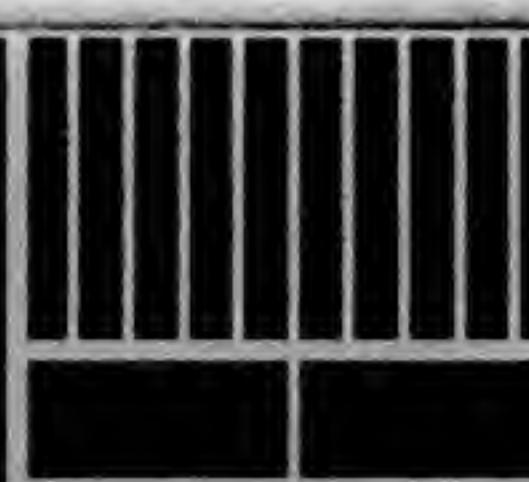
12605

04

Deutsche Apotheker.

HENRY DIERS,
APOTHECARY,
South East Corner Fifth and Biddle Streets,
ST. LOUIS. MO.

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GEORGE ENGELMANN PAPERS



0 1 2 3 4 5 6 7 8 9 10
cm

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GARDEN

A. concolor

Poor stat. Parz 1874

Jan 29 1876

x 150

one of the broadest
and stoutest leaves

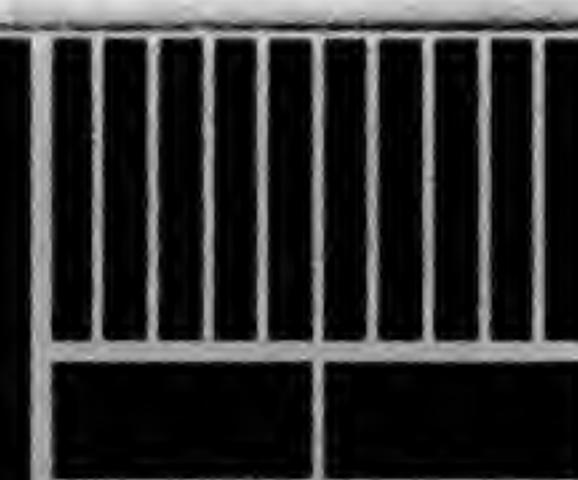
x 30

Lower Keel.

Upper Keel

few and scattered
hypoderm cells
often fewer than two

hypoderm not always
so crowded on
edges



0 1 2 3 4 5 6 7 8 9 10

cm

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MISSOURI
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12606

ALEX. L. EITZINGER,
APOTHECARY & CHEMIST,
Cor. 4th & Olive Sts., St. Louis.

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GEORGE ENGELMANN PAPERS



0 1 2 3 4 5 6 7 8 9 10

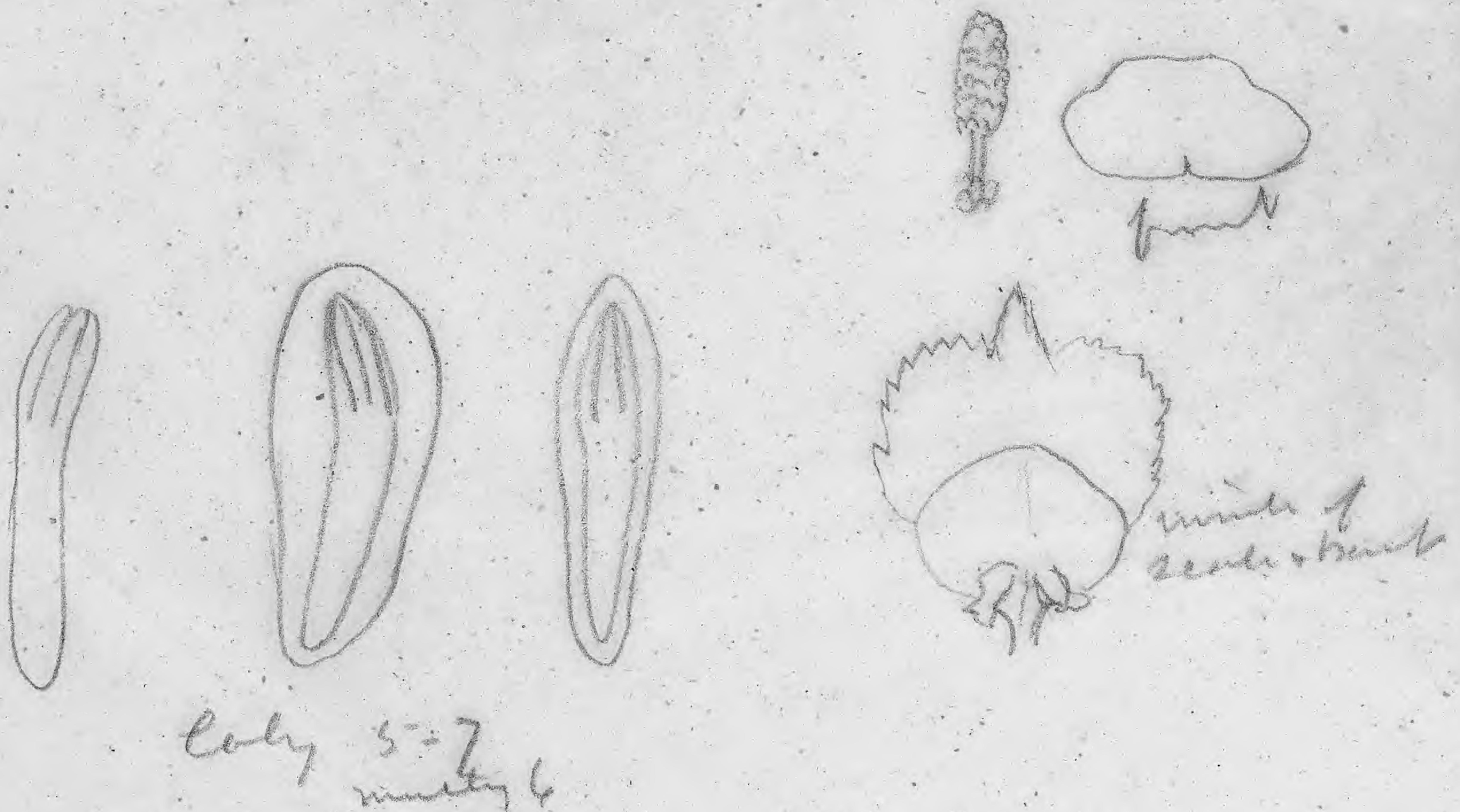
cm

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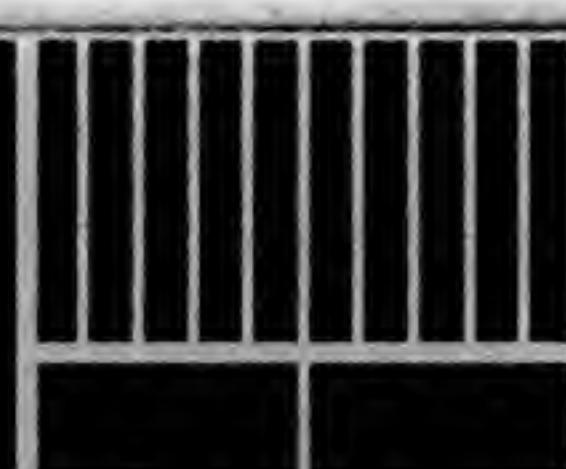


MISSOURI
BOTANICAL
GARDEN

15802



MISSOURI BOTANICAL GARDEN
STANISLAW HANZLIK



0 1 2 3 4 5 6 7 8 9 10

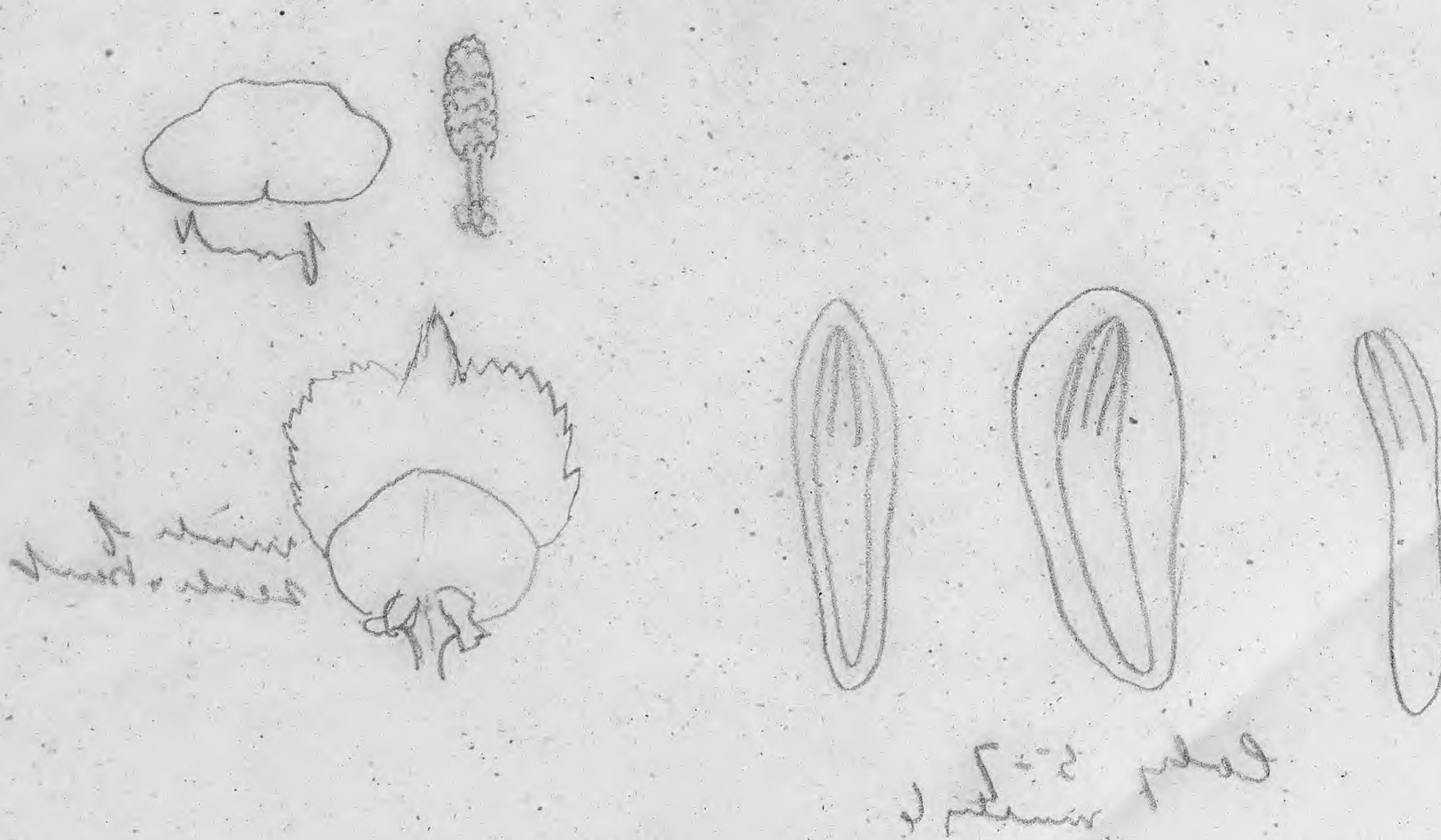
cm

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MISSOURI
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GARDEN

12607



MISSOURI BOTANICAL GARDEN
GEORGE DODGE PAPERS



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cm

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MISSOURI
BOTANICAL
GARDEN

original

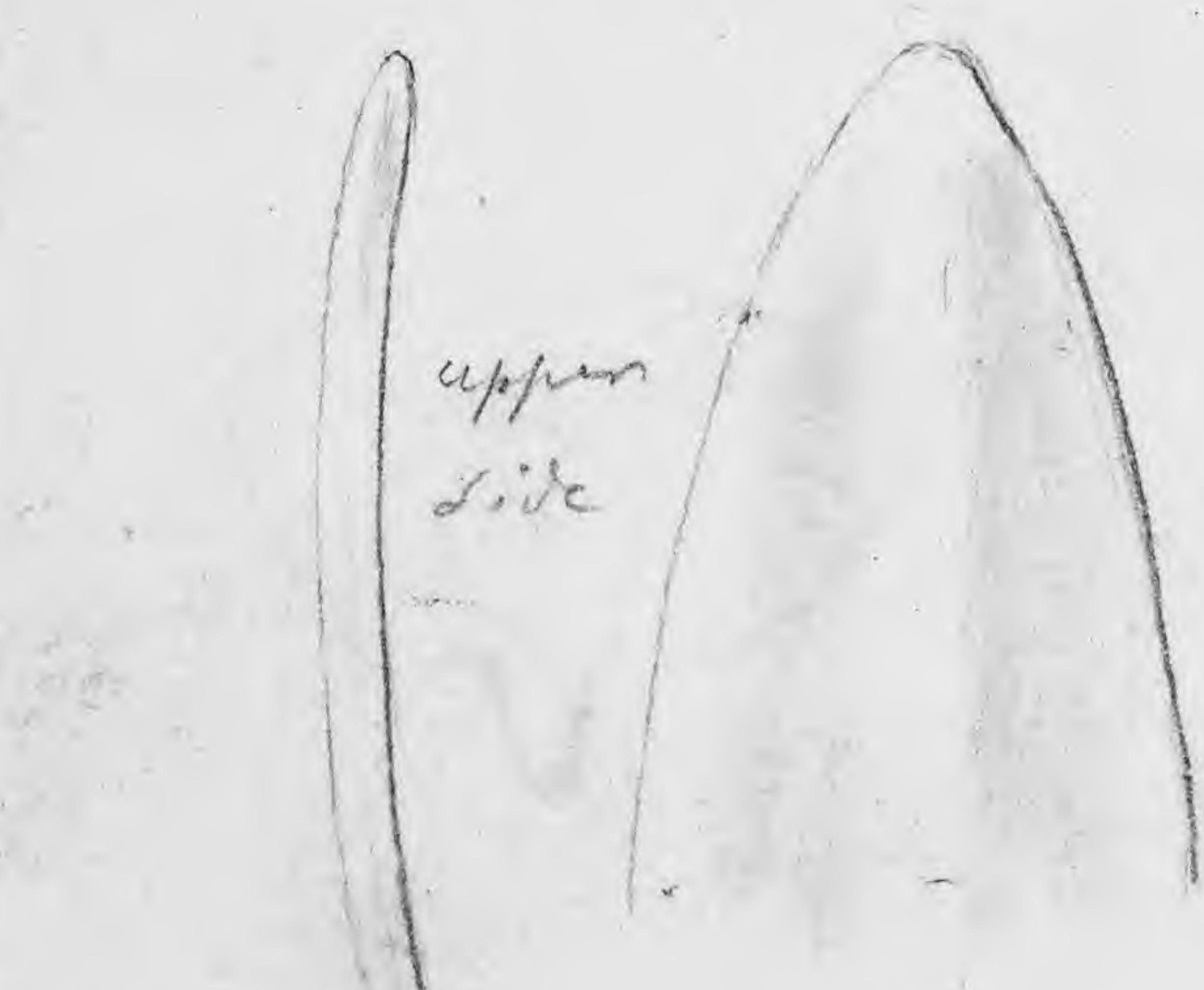
Abies concolor!

April 7 1872

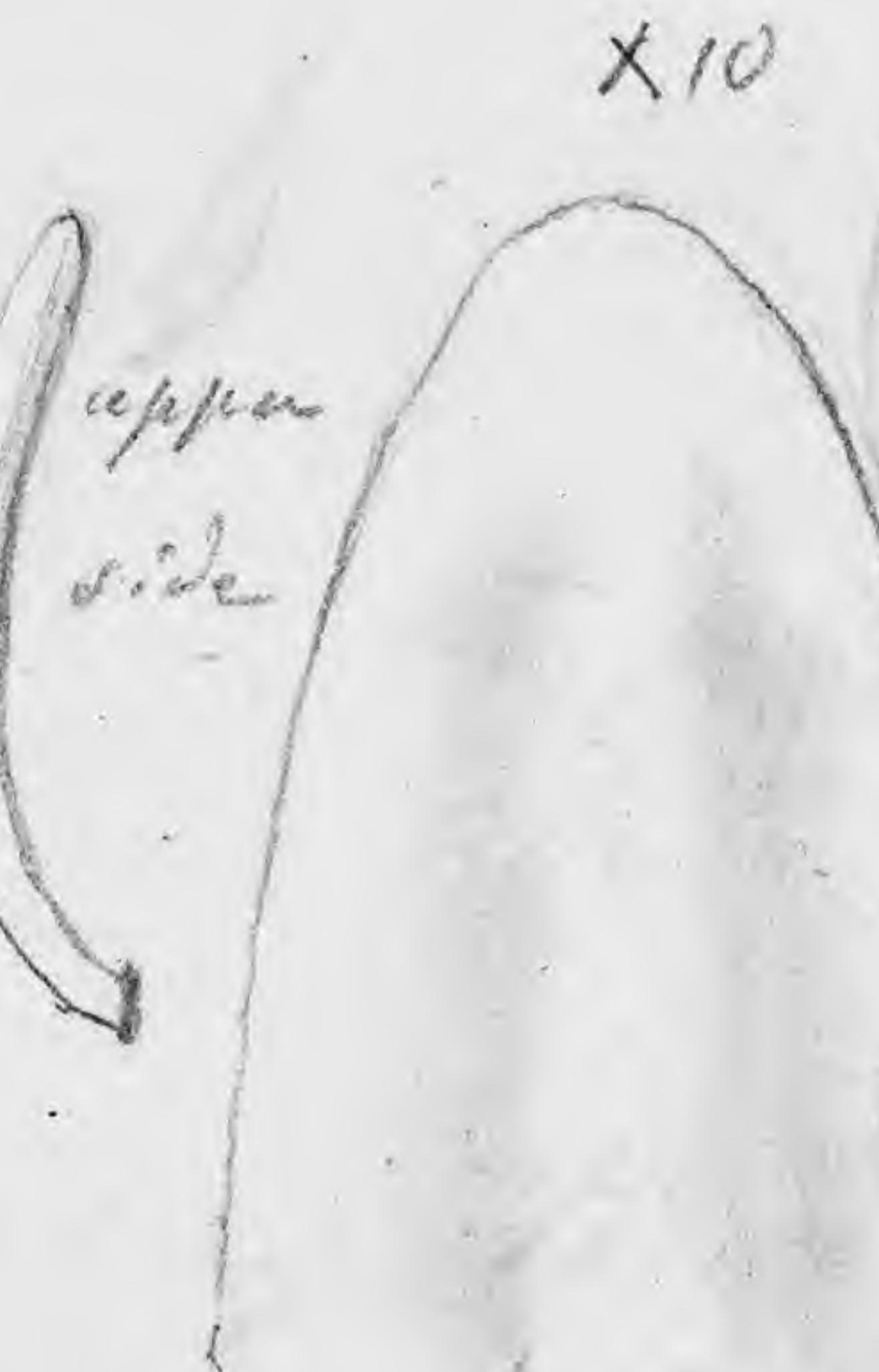
Tenino Santa Fe No 828

nat size

x10



leaf of sterile branch



leaf of fertile branch



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cm

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Sept 7

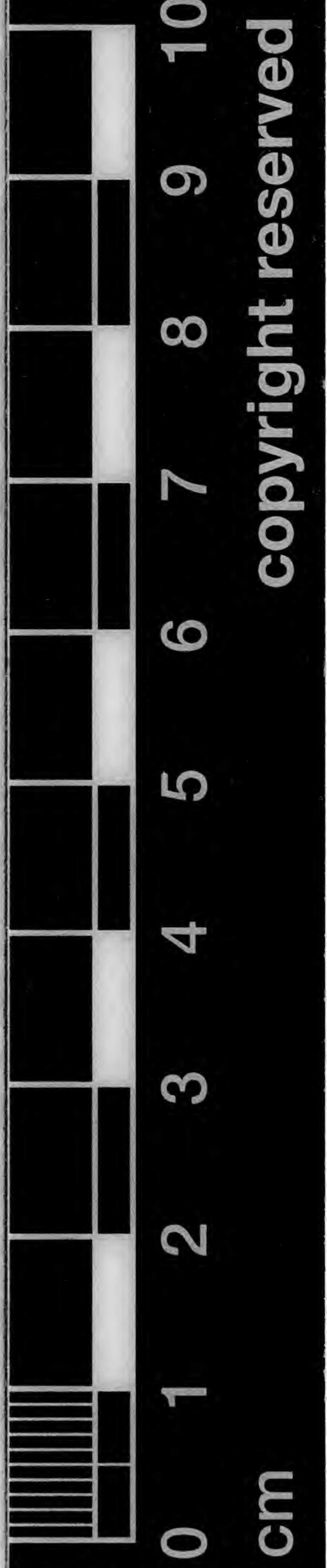
12608

25 x 14
3/2 : 2

The exp
slightly
te
8 x 3/2
over twice
of inner
edge,
pressed

ENGELMANS
Sawyer's Great Work
of the
United States

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS



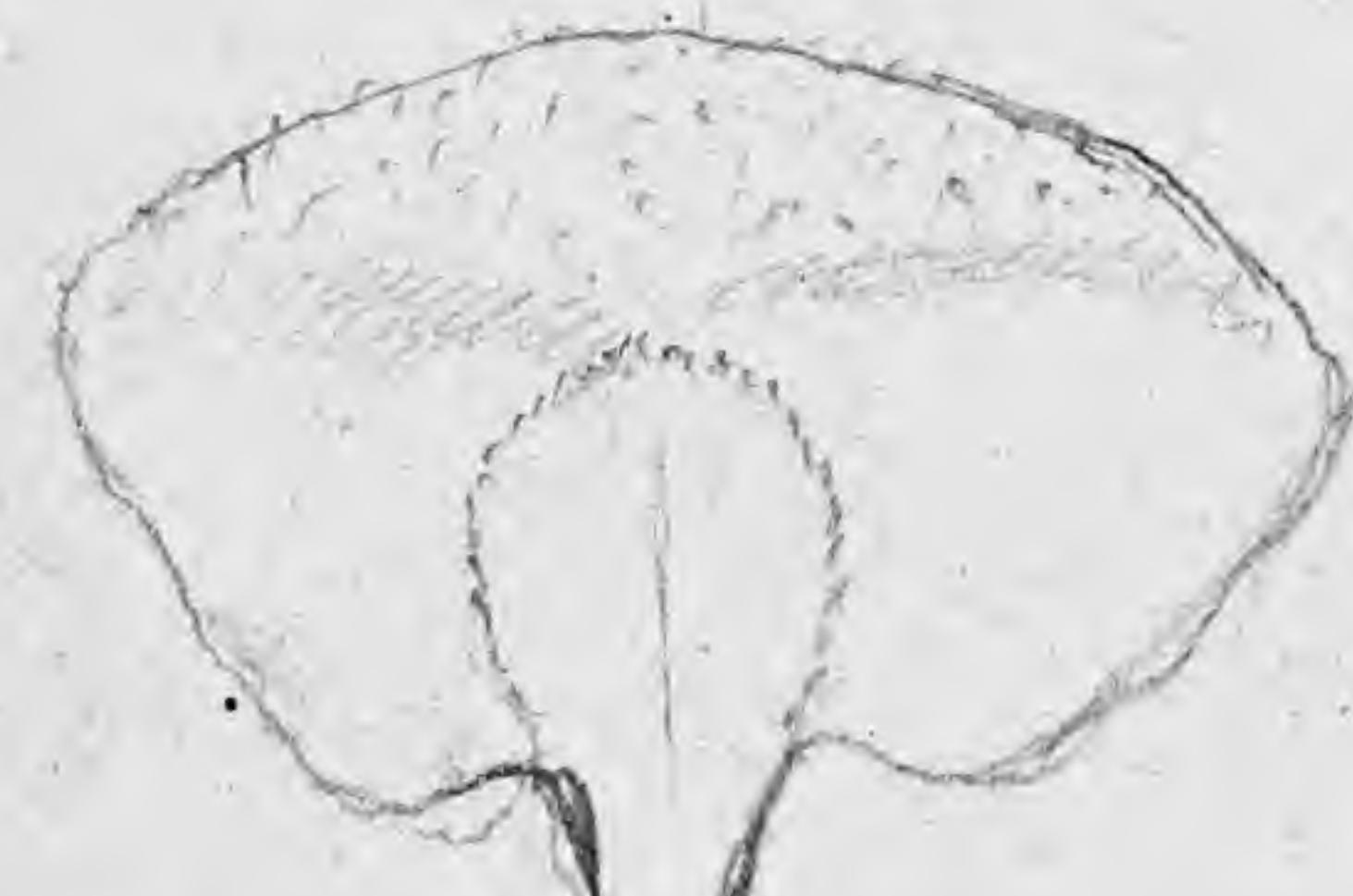
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Abies concolor!

Sept 7 1870

Santa Fe ladder 828, 1867.



scale 25×14 mm
 $= 3\frac{1}{2} : 2$

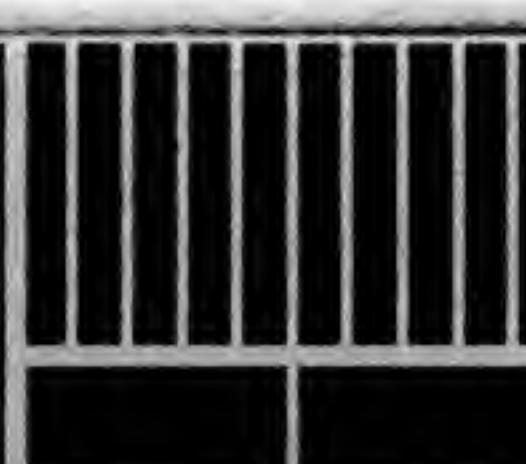
Bract just reaching the exposed part of scale, oblique or slightly acute, never mucronate



$\times 2$

$8 \times 3\frac{1}{2}$
over twice as long as wide
cavum of inner valve on
on lateral edge, not on upper

Cones acutish, not depressed or rotund



0 1 2 3 4 5 6 7 8 9 10
cm

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MISSOURI
BOTANICAL
GARDEN

DEPARTMENT OF BOTANY
SCHOOL OF MEDICINE
UNIVERSITY OF MISSOURI

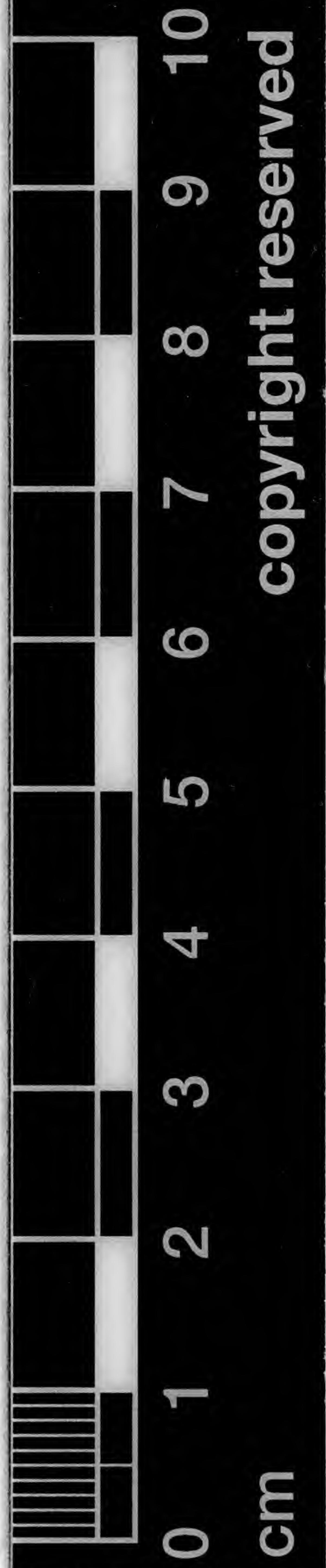
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Stibium concolor, Engelm.

Santa Fe, Fowler No. 828

Nov 1862



scale



seed



MISSOURI BOTANICAL GARDEN
Olive Sts., St. Louis.



0 1 2 3 4 5 6 7 8 9 10

cm

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MISSOURI
BOTANICAL
GARDEN

MISSOURI
GEORGE EN

12610



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0 1 2 3 4 5 6 7 8 9 10

cm

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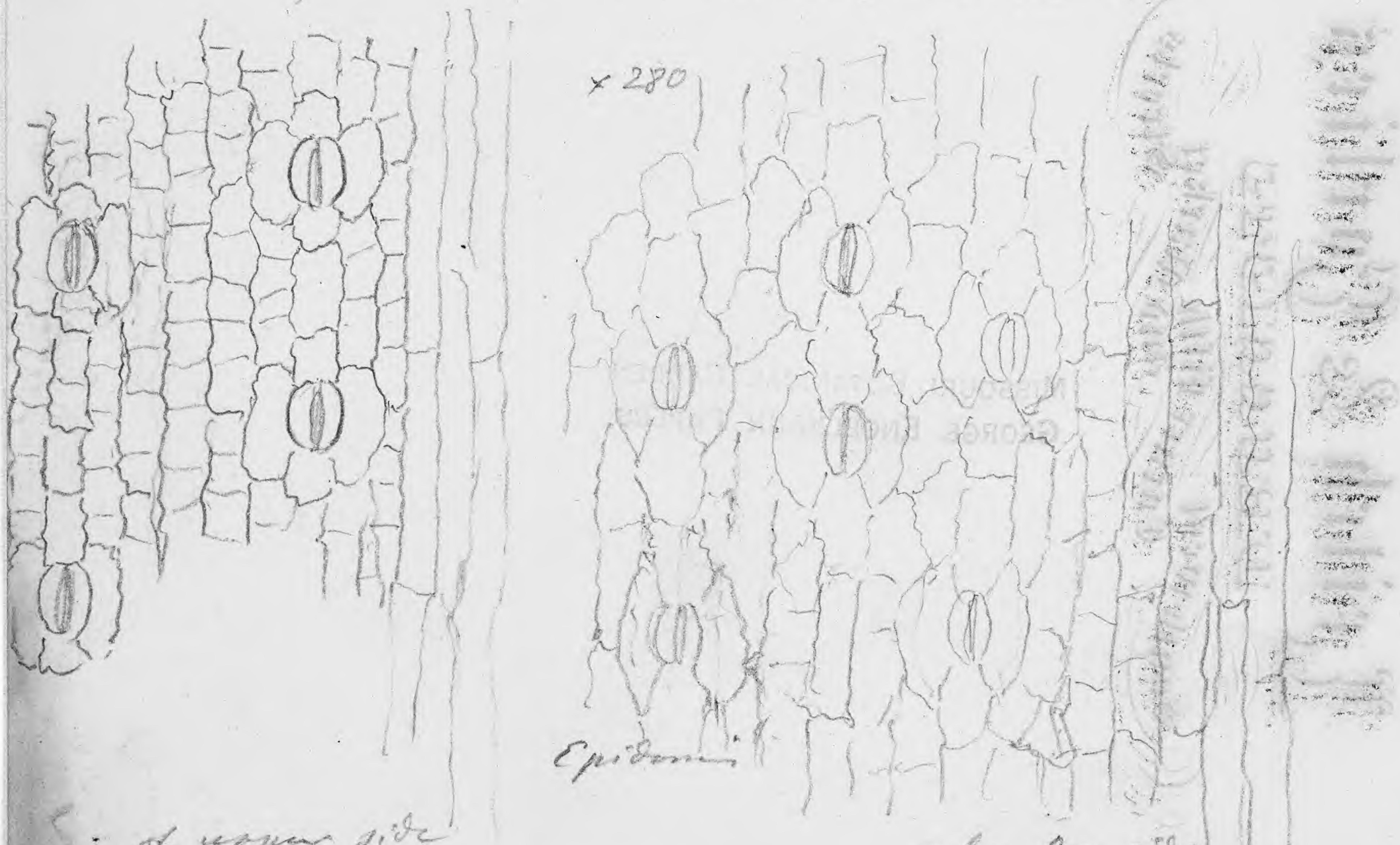


MISSOURI
BOTANICAL
GARDEN

Abies concolor

April 7 1872

Zentla, Santa Fe 818



of upper side
of leaf

of under side
of leaf

one of the large leaves of the sterile branch



0 1 2 3 4 5 6 7 8 9 10

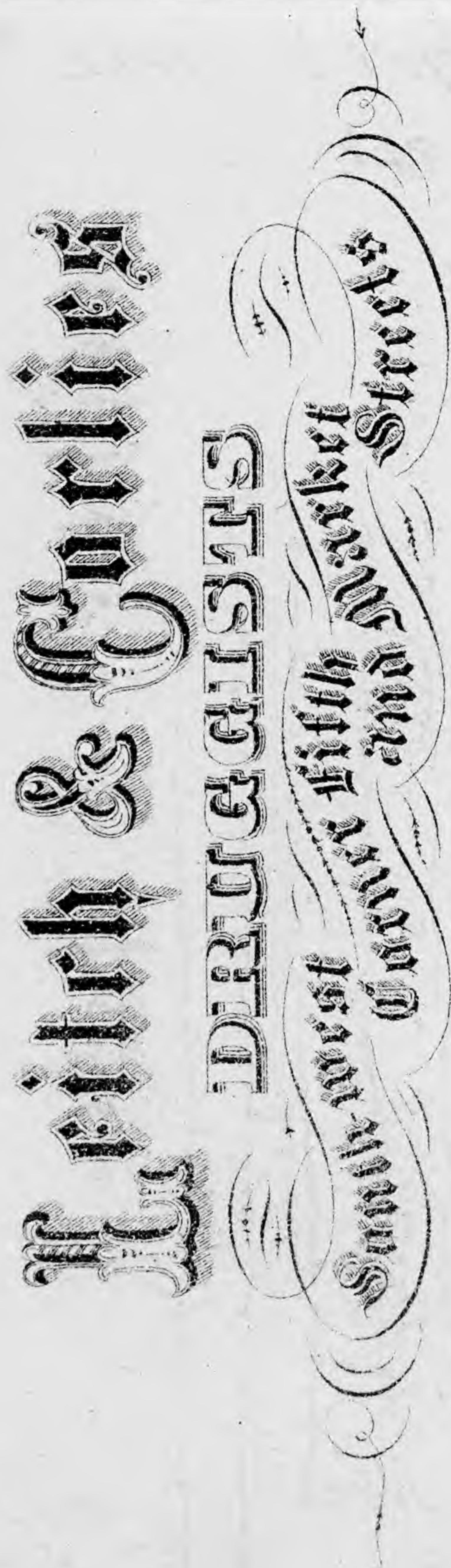
cm

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MISSOURI
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0 1 2 3 4 5 6 7 8 9 10

cm

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MISSOURI
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Abies concolor

Oct 24 1870

X30

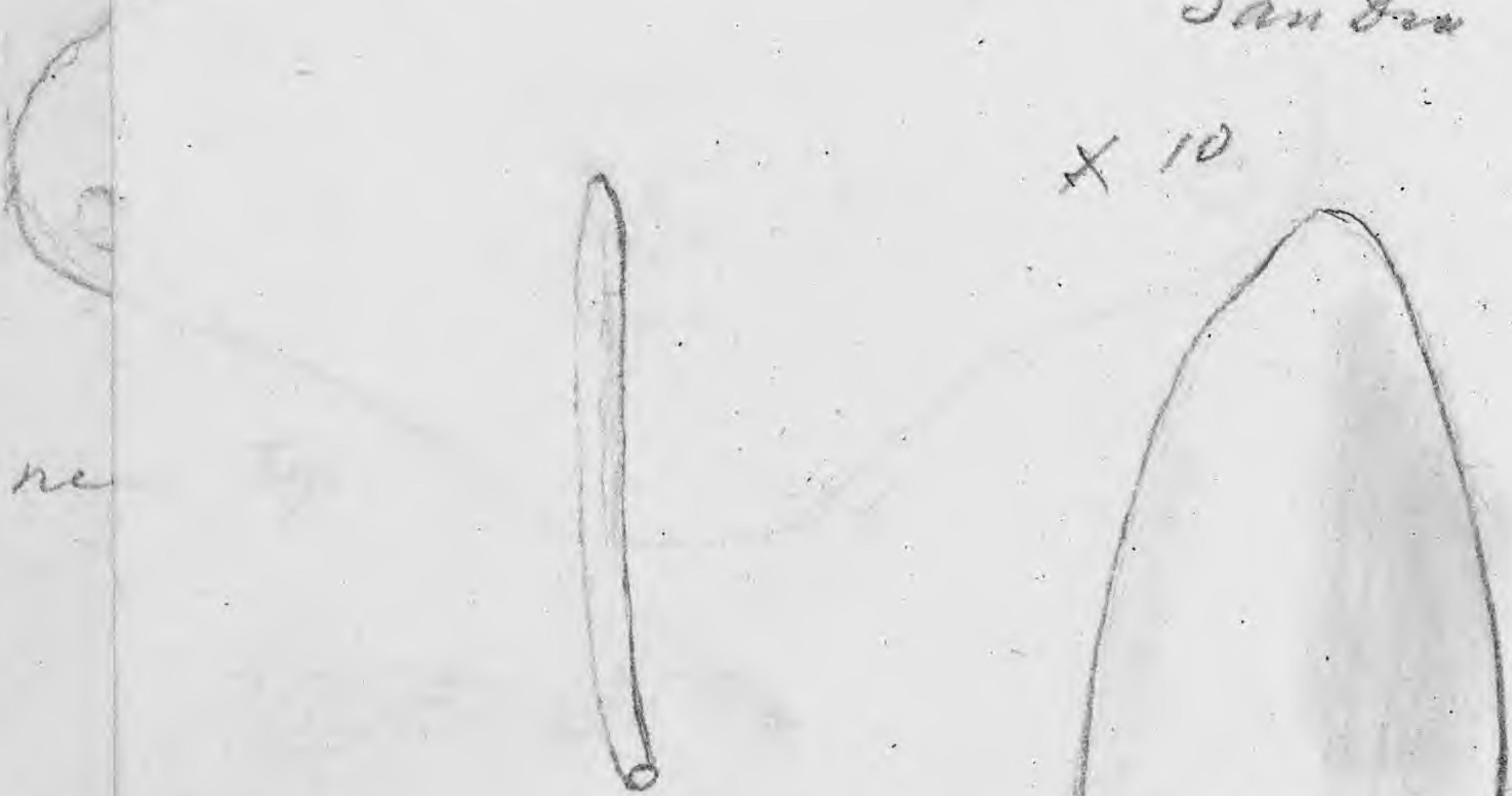
Abies

~~as in~~ ~~as in~~

April 12 1872

San Geronimo Mts. Mex. - Dr. Bigelow

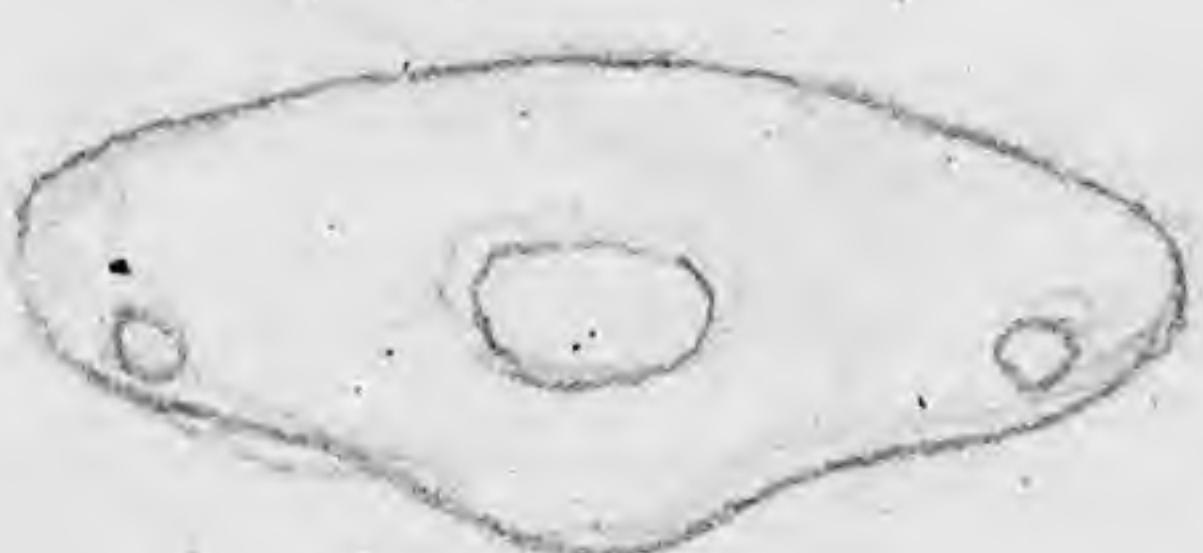
X 10



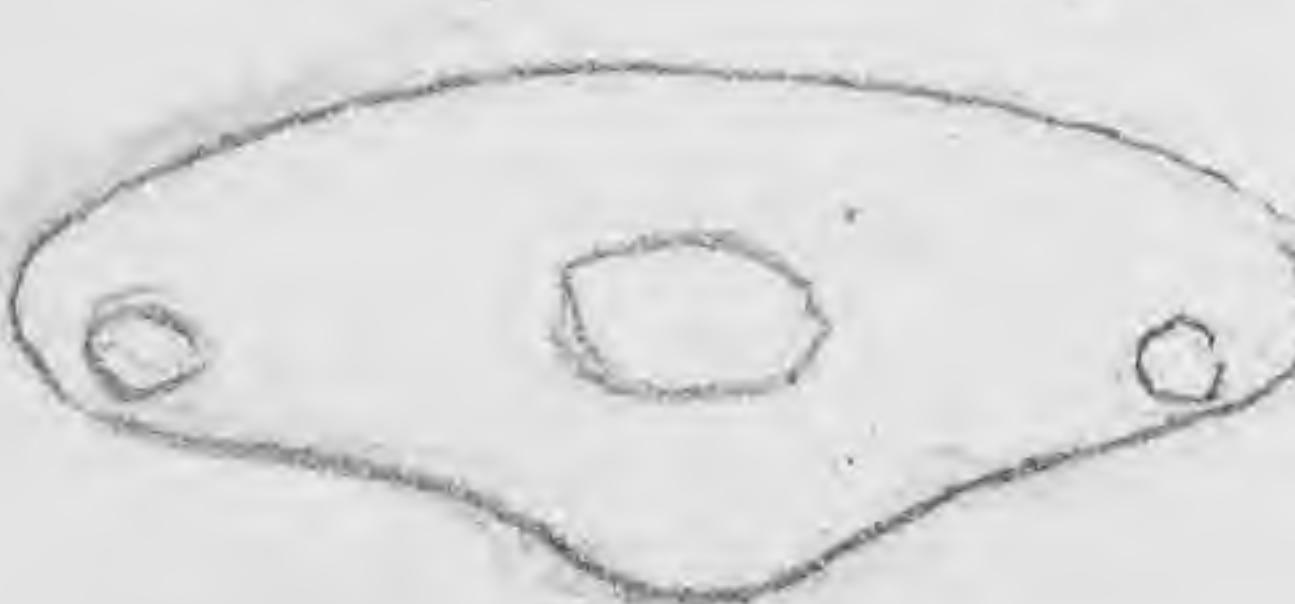
near

near

section of leaf
near tip



in middle



near base



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cm

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MISSOURI
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Oct 24

Bridgeman

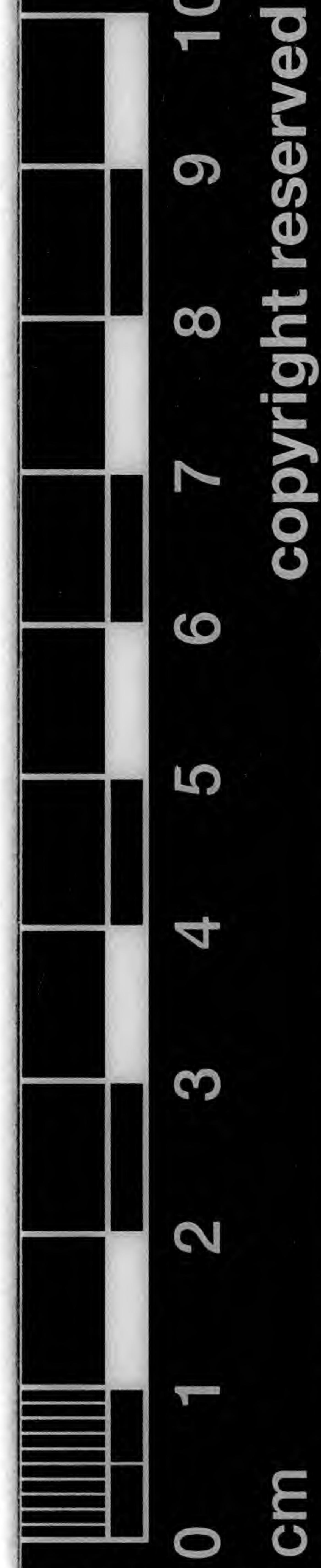
12612

leaf

DRUGGISTS

Saint Louis Missouri and New Orleans

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS



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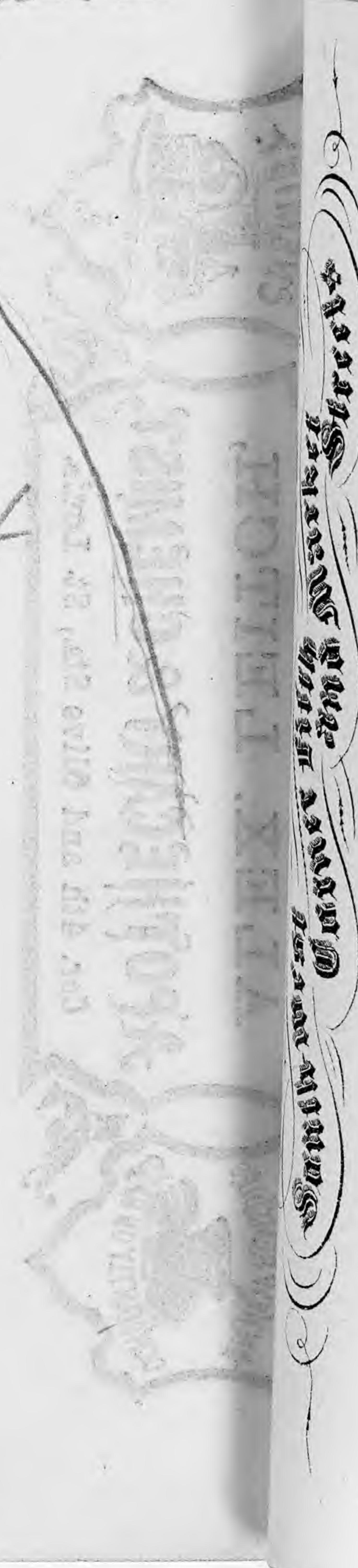
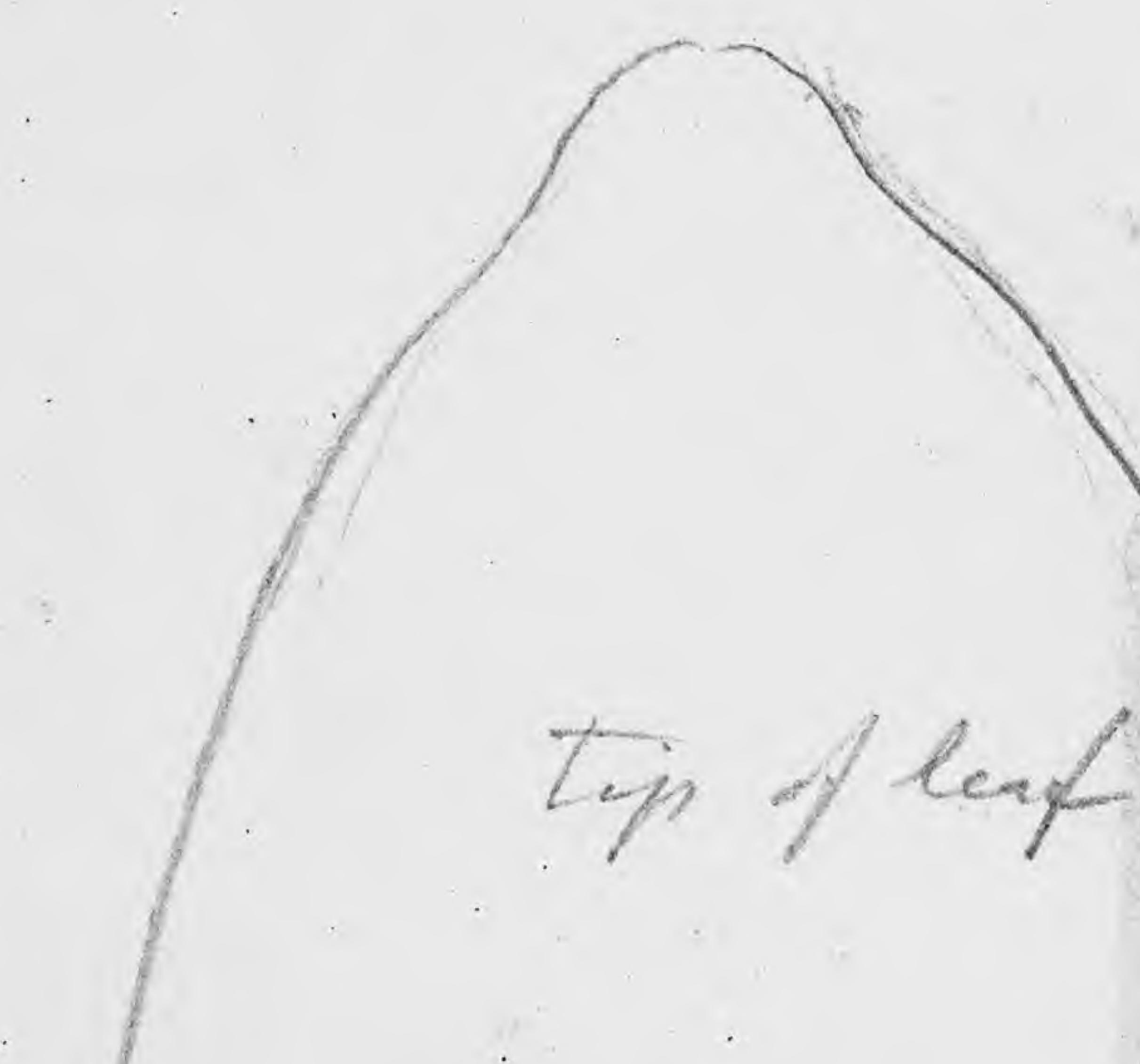
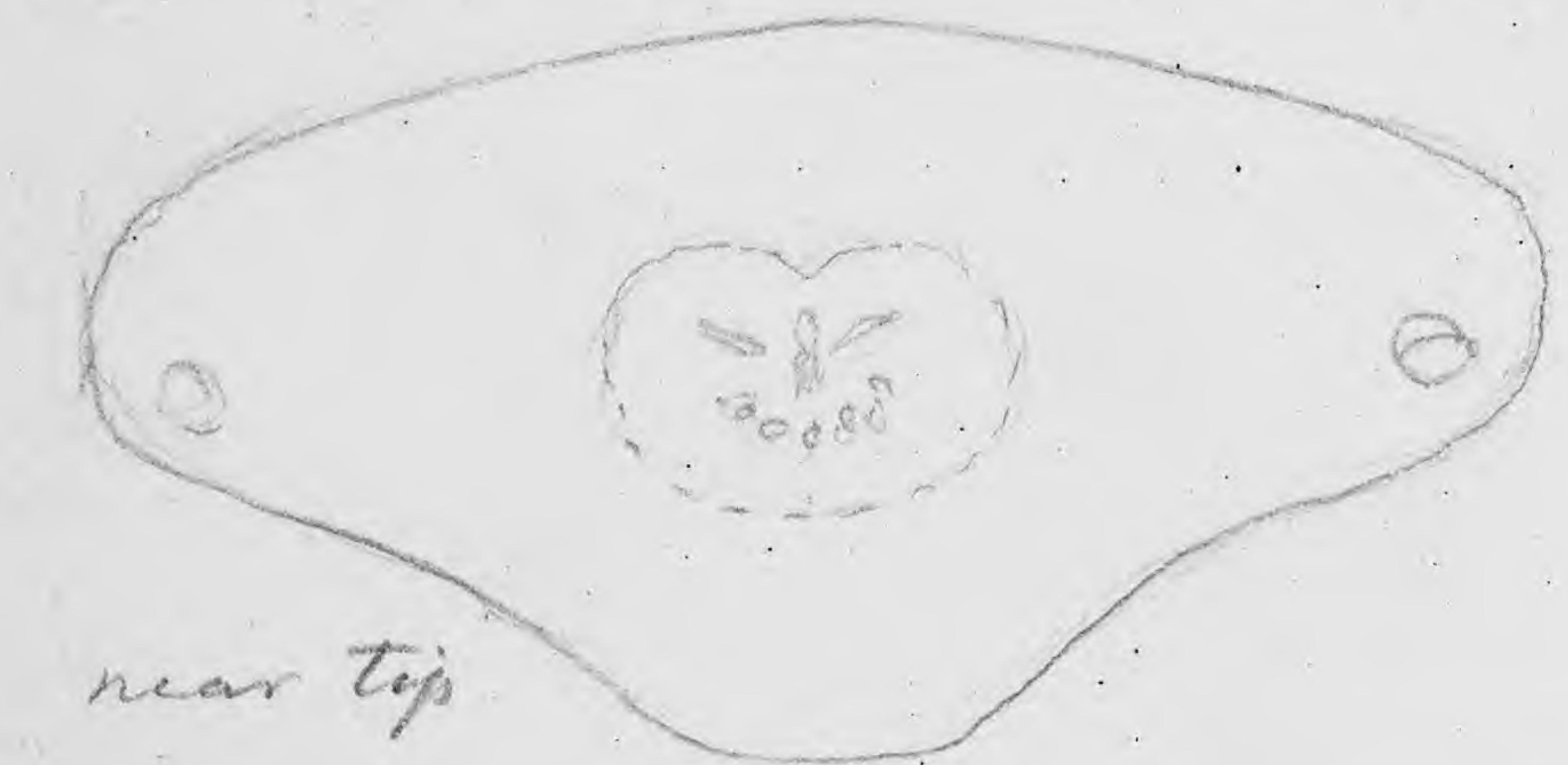
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Oct 24 1870

Abies concolor

X30

San Dia Mountains, Dr Bigelow



0 1 2 3 4 5 6 7 8 9 10
cm

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MISSOURI
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GARDEN

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GEORGE ENGELMANN PAPERS



0 1 2 3 4 5 6 7 8 9 10
cm

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MISSOURI
BOTANICAL
GARDEN

Abies concolor
Stach.

Nov 874

x10



mostly 6-6 Cotyl
rarely 5 or 7
Cotyl. about $\frac{1}{3}$ - $\frac{1}{2}$
the length of
embryo



0 1 2 3 4 5 6 7 8 9 10
cm

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MISSOURI
BOTANICAL
GARDEN

12614

HENRY EHREHARDT,
PHARMACEUTICAL CHEMIST,
No. 301 South Fifth Street, Cor. Myrtle, ST. LOUIS.

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Date

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Or

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GEORGE ENGELMANN PAPERS



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cm

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GARDEN